MILITARY REVIEW

VOLUME XXXII JUNE 1952 NUMBER 3

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MILITARY REVIEW—Published monthly by the Command and General Staff College at Fort Leavenworth, Kansas, in the English, Spanish, and Portuguese languages. Entered as second-class matter August 31, 1934, at the Post Office at Fort Leavenworth, Kansas, under the Act of March 3, 1879. Subscription rates: $3.50 (U.S. currency) a year in the United States and other countries of the Western Hemisphere: $4.50 a year in all other countries. Reprints are authorized, provided credit is given the "MILITARY REVIEW," CGSC, Fort Leavenworth, Kansas.

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WHO FAILED TO GET 'THE WORD'?

Colonel George C. Reinhardt, *Corps of Engineers*
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MILITARY histories appraise campaigns in terms of principles of war, heedless of technological progress. They explain that Pope was defeated at Second Bull Run because he permitted his right flank to be turned; that Washington lost the Battle of Long Island Heights for the same reason; and how the German disaster on the Marne in 1914 resulted from the envelopment of the German flank (still the right one). These three battles, during three different centuries, have nothing in common save identical errors by three unsuccessful commanders.

Poor pompous Pope lost his command and was allotted an unenviable status in history. Von Moltke (the younger) was credited with the Marne error and is remembered solely for his timidity which failed to "keep the right strong" as Von Schlieffen had charged. Washington fared better. Names like Trenton and Yorktown have dimmed the memories of Long Island Heights just as the events transpiring at those latter places effaced the earlier reverse.

Yet military histories are justified in their harsh judgments since war's principles are immutable, however difficult the art of their application. That commanders repeat the tactical boners of their professional forebearers is less surprising than the even more frequent recurrence of identical logistic crimes. True, there are no "principles of logistics" to parallel the renowned principles of war. Whether that is due to military indifference or because such principles do not exist remains an open argument.

Nevertheless, it is a fact that many commanders have had to relearn, years later, logistic instruction imparted to their predecessors in the school of hard knocks. Incidents better not exhumed from recent wars betray abysmal ignorance of lessons, as essential to victory as the principles of war, recorded in the voluminous files of war offices in many countries. Some of those unheeded records can be gleaned from the annals of the American Civil War, not a few of which were due to the hard common sense of a railroad executive placed in charge of military transportation. The first major conflict in which railroads played an important part would be expected to reveal mistakes in adapting that technological advance to military art. That so slight attention was paid the

Students of the military art can study, to their benefit, lessons of logistic as well as tactical history. Many commanders have had to relearn, through experience, instruction imparted to their predecessors

chronicler of many of those errors is as remarkable as the principal's pungent exchanges of telegrams with the President of the United States and other Government officials.

On 26 April 1862, Mr. Herman Haupt (a West Point graduate of the class of 1835), who had previously been engaged in the construction of the Hoosac tunnel in Massachusetts, reported to General McDowell, commanding the Department of the Rappahanock, at the personal request of Secretary of War Stanton. Promptly appointed "aide-de-camp with the rank of colonel" by the general who had been "his Plebe" when Haupt was a first classman, the new colonel refused all pay, reserved the "right to retire whenever, in my opinion, my services can be dispensed with; to perform no duties on the Sabbath unless necessity urgently requires it." Despite these unusual reservations and a formidable title, "Chief of Construction and Transportation, Department of the Rappahanock," Haupt lost no time demonstrating his ability in rough-and-tumble field engineering.

The Bean-Pole Bridge

In 4 days, he achieved the near miracle of "further arrangements with the War Department"; "procured implements and supplies" and returned to Acquia Creek to commence operations. Notable among these was the construction, with untrained soldier labor, of bridges over Ackakeek Creek and Potomac Run. The former in two working days; the latter in nine (Sabbath excluded). The Ackakeek structure was a single span of 150 feet, the other some 600 feet long and 43 feet above the water. Both successfully passed the railroad traffic of those days. Of the Potomac Run Bridge, President Lincoln was moved to tell his War Committee: "That man Haupt has built a bridge nearly 100 feet high over which loaded trains are running every hour. Upon my word gentlemen, there is nothing in it but bean poles and cornstalks."

These structures, and the railroad repairs intervening between them, as well as wharfage at Acquia Creek, were ready by 26 May, the date set for McDowell's triumphant "on to Richmond" execution of the "pincer movement" already begun by McClellan's advance up the peninsula from Fortress Monroe. As so frequently occurs, logistic and tactical dilemmas appeared simultaneously. McDowell's force was ordered to Front Royal in a futile effort to capture an upstart Confederate named Jackson. Haupt discovered that his principal assistant, a civilian named Daniel Stone, had co-equal authority from Secretary Stanton and divergent views upon exercising it.

Record Shattering T/O&E

On this occasion, the logistic command difficulties were more readily, and successfully, solved than their tactical counterparts. The latter witnessed Jackson's escape to join Lee in the Seven Days battles while McDowell's aid was denied McClellan. Yet, only 2 days elapsed until, on 28 May, Haupt received unequivocal recognition by probably the most swiftly complied T/O&E for a major unit ever to issue from the War Department. Expanding the colonel's authority to the "Army of Virginia," that remarkable document, bearing Stanton's signature "by order of the President," directed Haupt to form a "permanent corps of artificers, organized, officered, and equipped as you prescribe"; to "employ civilians at discretionary rates of pay," to "supply said corps," to "take possession and use all railroad property and equipment within the geographical limits of the military department," and even to "add to ordinary rations for that corps as you deem necessary."

In effect, that document established, for one United States army at least, a Transportation Corps, complete and independ-

ent, possessing its own construction engineers. The records of the Civil War attest the use made of such a corps, its remarkable achievements, and its extension to all armies of the United States.

Precedent for even abolishing and reconstituting such a corps likewise exists in those records. Late in June 1862, General Pope succeeded McDowell, who was made the scapegoat for Jackson's brilliant maneuver, and announced: "an independent department of construction and operation of railroads is unnecessary. Railroads are for transportation of army supplies and should be under the direction, control, and management of the Quartermaster."

How the General Learned

Early in July, Colonel Haupt, still refusing his pay, returned unperturbed to his contracting business, but not for long. Within a month, he received a telegram from Assistant Secretary of War Watson: "Cannot get along without you. Not a wheel moving on any of the railroads."

By 9 August, Haupt was back on the job, taking orders from a "now quite civil" General Pope in the Rapidan camp which faced the forces of Robert E. Lee. McClellan was slowly concentrating around Alexandria following his evacuation of the peninsula. The startling, and disastrous, results of the ensuing campaign (Second Bull Run) established Haupt, promoted to brigadier general, and his "corps of artificers" as a fixture in all Federal armies for "the duration." Nevertheless, commanders in many lands still had to relearn Pope's lesson, the hard way. They never got the word.

Prior to his dismissal, Haupt displayed his organizing skill while simultaneously performing Herculean tasks. First, he opened the railroad to Front Royal in support of McDowell's march and then reopened the Orange and Alexandria Railroad, which had been precipitately handed over to the enemy by the unnecessary recall of Burnside's corps from Fredericksburg to "protect the city of Washington." Performing a multiplicity of tasks simultaneously, the redoubtable Chief of Construction and Transportation found time to issue, on 11 June, the first standing operating procedure for a United States Army Transportation Corps.

Organization followed military lines, with squads, platoons, and companies, regardless of whether personnel were "detailed soldiers" or "employed civilians." Attempts, including the last war, to mix civilian contractors' crews with low-paid, underprivileged soldiers on combat zone projects have never attained equal success. Neither have the principles of General Haupt's unique T/O&E been duplicated. A corps adjutant was given the unenviable additional duties of "Commissary and Quartermaster"; supply accountability was rigidly prescribed; and, although the term itself was not used, supply discipline was plainly provided for.

Gentlemen as Well as Soldiers

Both morals and industry were given due attention. "Men not willing to work 16 hours continuously when required are not wanted"; "use of profane or obscene language and, especially, depredations upon property will be punished as circumstances may require." Substantive rank, another modern term, found application: "consider civilian superintendents of construction, while so employed, as having the rank of captain and foremen that of lieutenant." The regulations closed with a directive to the hard-pressed adjutant to maintain a diary on which to base a quarterly report, as well as an exhortation to all members of the corps to "show themselves to be gentlemen as well as soldiers."

Some 2 weeks later, Colonel Haupt promulgated General Orders No. 7 to "prevent certain abuses by officers." These orders, duly approved by the commanding

general, forbade the use of military railroads by officers, "regardless of rank," for transportation of "articles intended for private use" without payment of freight charges. It also directed that "any officer who shall allow his name to be used by sutlers to secure transportation for that which is not his personal property will be considered guilty of conduct unbecoming an officer and a gentleman." Records are decorously silent as to the necessity for General Orders No. 7. Alterations in phraseology alone would make most of this Hauptian wisdom valid, valuable, logistic doctrine for any army. Yet how many used it prior to getting the word by trial and error methods?

Haupt's dismissal by Pope left him unruffled. He declined the proffered intercession of Assistant Secretary of War Watson, whose letter of commendation declared "if all other departments had been as well organized and managed as the military railroads, the 'war chariots' would not have been so frequently off the tracks." The ink on that missive was scarcely dry before the telegram, already quoted, recalled Haupt to the Army.

On 18 August, Pope's chief of staff approved General Orders No. 23 reconfirming Haupt's authority over "all persons employed in any way on the railroads" and directing "no officer, whatever be his rank, shall give any orders to any employee of the roads, or orders respecting the running of trains, construction or repair of roads, transportation of supplies or troops, except by authority of these Headquarters through Colonel Haupt. All requisitions for transportation and applications for repair or construction will be made directly to him."

'Confusion From the Usual Causes'

The wisdom of these orders was demonstrated before nightfall. General Pope "rode in in haste with the information that the enemy was advancing rapidly" and directed an immediate retreat. He ordered Haupt to "do all in his power to remove the large stores at Culpepper." This task the reappointed transportation chief took in stride, personally and expeditiously, which was all that saved the supplies, since the "retrograde movement" (that term at least was known then) "commenced immediately and was so expeditious that the next day the whole army was posted behind the Rappahanock."

Mission completed, Haupt turned his attention to "reorganizing the transportation which had again been thrown into confusion from the usual causes: military interference, neglect to unload and return cars, too many heads, and, as a consequence, conflicting orders. General Pope had at last discovered that a railroad could not be run successfully with more than one person to give orders." Those precepts continue today better than the observance by which they have been honored in some intervening campaigns. Perhaps their recording received less professional attention than use of the term "retrograde movement."

The ubiquitous Haupt became surprisingly involved in tactical as well as logistical matters before long. On 22 August 1862, while visiting forward headquarters, General Pope's transportation chief noted reports of enemy wagons moving up the far bank of the Rappahanock. Deciding that Federal scouts were posted much too close in, he asked his commander if there was danger of a flank movement. Pope dismissed the question in a cavalier manner. Haupt did not pursue his suggestions lest they be received as "an impertinence, coming from an officer in my position."

The Situation Succintly Estimated

Haupt's recollection of his tactical instruction at the Military Academy was almost immediately justified as completely as its opposite for the unfortunate Pope. Returning by train to Manassas, then

"Ad-Sec C. P.," Haupt found two startling telegrams awaiting him. The first told of the capture, by Confederates, of the train scheduled to arrive 1 hour after his own; the second message, from General Pope in person, enjoined Haupt to "retire rolling stock, enemy in largely superior force has turned my right flank."

Except for the modifying "largely superior," which was utterly false, that brief estimate of the situation appears to have been the most accurate the confused Pope was able to make during the course of the campaign. In 4 days, the situation at the battlefront had become so mysterious to almost everyone, except Generals Lee and Jackson, that the "Chief of Construction and Transportation, Army of Virginia," received, during the critical hours of 26 August 1862, at Alexandria, Virginia ("Headquarters Communications Zone"), a peculiar telegram. "Colonel H. Haupt: General Smith, General Slocum, General Sturgis, *or any other general officer you can find,* will immediately send *all the men you can transport* to Bristoe Bridge *or* Manassas Junction. Show this order. H. W. Halleck, General-in-Chief."

When this sweeping delegation of authority occurred, General Pope erroneously believed he had trapped Jackson's corps. Momentarily, as sanguine as he had previously been fearful, Pope was not aware of Lee's rapid advance with the main body of the Confederate Army. Little more than 20 miles away, the bulk of General McClellan's 90,000 men had debarked from their transports to bivouac in and around Alexandria. Clearly, somebody had to order them into the struggle. The record shows how that was done, from distant GHQ in Washington, another dozen miles away.

The redoubtable Haupt, in his own words, "made search for some general officer to whom (General Halleck's) instructions could be communicated but could find none," adding a stringent comment: "The attractions of Washington kept most of the general officers in that city."

Extra Duty for Tech Staff

To further confuse the already complicated situation, General George B. McClellan arrived off Alexandria on a steamer. Haupt sought him out among the newly arrived transports. Finding the general "in the cabin of a steamer some distance below Alexandria, surrounded by his staff," Haupt showed him the telegram. Thereupon the transportation chief of one army explained to the commander of another the tactical urgency of the situation. Haupt unhesitatingly proffered his "plans to give (Pope) relief," by a relief column with "strong force necessary to protect the trains." McClellan, not unremarkably, rejected the course of action proposed in so unconventional a manner, remarking that "it would be attended with risk."

Undismayed, Haupt "reminded the general that military operations were usually attended with risk but were, in this case, not excessive." Perhaps the fact that both men were graduates of West Point (Haupt some years McClellan's senior) was all that prevented an abrupt termination of the discussion at this point. In any case, Haupt proceeded to mollify the asperity of his opening remark by explaining a detailed tactical plan for an approach march by rail.

The high level staff conference continued until disturbed by the sudden indisposition of the general who "became very pale and requested brandy." Even this personal service devolved upon Haupt who procured the brandy after some delay (presumably another rowboat excursion). Thereupon the general revived sufficiently to write a dispatch to Halleck, the original of which the thoughtful Haupt preserved as he expedited its context over his railroad telegraph.

This document reported the tactical situ-

ation, over McClellan's signature, by verbatim repetition of the information received from Haupt and unsubstantiated by an agency of McClellan's staff. It appealed to Halleck for "cavalry for reconnaissance" and ended with the warning that the "defense of Washington must be made secure."

G2 to the President

Thus began Haupt's odd participation in the high command's tactical decisions, if that term can be stretched to include what actually happened. Next morning's light brought Haupt a message from McClellan, "Have you heard anything since I saw you last night?" This plea was accompanied by another telegram for dispatch to Halleck, definitely advising the commander in chief: "Enemy advancing with 120,000 men to attack Washington and Baltimore . . . think our fortifications this side of river (Potomac) unsafe—McClellan." Contemporaneously compared with Napoleon, Little Mac seems to more closely resemble Hitler in his intuitive estimates of the situation.

By this time, the President of the United States was addressing numerous telegraphic requests for information direct to this remarkable man who was still, remember, no more important officially than a technical staff officer of Pope's disintegrating army. "Colonel Haupt: What news from direction of Manassas? What generally?—A. Lincoln." "Colonel Haupt: Is the railroad bridge over Bull Run destroyed?—A. Lincoln." "Colonel Haupt: What news?—A. Lincoln," and the same day, "Colonel Haupt: Please send me the latest news.—A. Lincoln." A few hours before this last (at 302100 August), McClellan chimed in with: "Colonel Haupt: Do you know what that firing is?—Geo. B. McClellan."

The record shows that all missives were answered promptly with an accuracy and scope creditable to a professional G2. But we must not clothe Haupt in the mantle of infallibility while performing his unexpected tactical role.

In response to the President's early morning telegram on 31 August ("What news? Did you hear any firing this morning?—A. Lincoln."), Haupt instantly replied: "No news received as yet this morning. Firing heard distinctly in direction of Bristoe at six o'clock. Sent telegraph operator on first train to Bull Run to make connection and report all he learns." Later, this remarkable special staff officer "sent out a reconnoitering party of 200 sharpshooters with operators and wire to repair telegraph and report." This led even Haupt into a partially "intuitive" report to the President that "our forces had held Bull Run Bridge against very superior forces. The rebel forces at Manassas were large and several of their best generals in command."

Promptly Haupt received a response that ranks high in the art of intelligence evaluation by the civilian Commander in Chief. "Yours received. *How* do you learn that the rebel forces at Manassas are large and commanded by several of their best generals?—A. Lincoln."

A similar slip might be recorded without derogation of Haupt's reputation. At precisely 0425 says the record, the Chief of Construction and Transportation reported direct to the Commander in Chief at the White House: "Forces sent out the previous night held Bull Run Bridge until 20 minutes of filing time." Before dawn he had his reply: "What *became* of our forces which held the bridge until 20 minutes ago, as you say?—A. Lincoln."

Alcohol Deranges Trains

The responsibilities of such an exchange of telegrams with the President of the United States, concurrent with duties to two separate army commanders, would have overwhelmed most men. To Haupt it was all no more than an interlude, im-

portant but still secondary to his basic mission as Chief of Construction and Transportation of a combatant force. His epic clash with the irate and inebriated division commander who bluntly informed the technical staff officer what he thought of their army commander: "I don't care for John Pope a pinch of owl dung" was viewed solely in terms of military results. The division commander's intransigence "deranged the trains for some time and kept 10,000 men out of the battle." Haupt refused an opportunity to prefer charges because his opponent "was not in his normal condition at the time," wisely commenting that "doubtless others remained in camp demanding transportation, yet knowing they could *march* to the field (of battle not 20 miles away) in one-third of the time required to furnish it."

Through it all the "single track railroad with limited equipment of cars and engines" although "detained for long periods at the front by failure of the proper officers to unload and return the cars" did remarkable service. Recorded interchanges of telegrams between Haupt and Assistant Secretary of War Watson, who seems to have been the logistic official at that office, confirm how every suggestion from topside had been anticipated by the operating agency.

Running a railroad, single track with few turnouts remember, on schedule, instead of by telegraph order, was an innovation of Haupt in the emergency, since "communications are often broken and trains lie idle." Prophets of doom within his own organization were confounded when the system worked.

Haupt recorded for posterity a blow at current demands for "mobile storage" in his complaint to General Pope regarding delays in the railhead: "Cars can be used either for transportation or for warehouses, but not for both."

Research and Development In Strange Fields

No emergency was engrossing enough to strangle Haupt's ceaseless concern over "research and development," whatever it may have been called then. During the August fighting, Mr. Watson sent him an "armor-clad, bulletproof car, mounting a cannon. The kindness was appreciated but the present was an elephant. I could not use it." But the Assistant Secretary's gift led to Haupt's designing and ordering bulletproof cabs on locomotives which later proved "indispensable for protecting engineers against the fire of guerrillas."

As "field expedients," Haupt developed revolutionary new equipment in his technical field. Blanket boats solved many hasty river crossing problems, even to ferrying field artillery on improvised rafts. From them followed the first light ponton boats, canvas covered, able to ferry freight cars, and produced by an "assembly line" set up and managed by Haupt himself. A torpedo to "quickly wreck wooden bridges" (the procedure had been burning) and steel hooks to twist railroad rails (the Confederates laboriously heated the rails in order to bend them) expedited demolitions. A portable jackscrew was developed to straighten rails damaged by enemy action; board bridge trusses were prefabricated to speed railroad construction; and the American Army's first rubber boat, a one-man float lashed on "small rubber cylinders for scouting purposes," all became issue items of the time through the improvised "research and development project" of this unique "corps of artificers."

Along with the equipment went tactical instruction concerning their use, such as, "1,000 cavalry marching two abreast will occupy 1 mile. Each party of 10 men should remove and destroy (with the portable hooks) 12 rails, each 20 feet long. The number of squads in 1 mile will be 44, requiring 440 men, leaving 560 for defense."

The destruction of 1 mile of railroad by this method was timed for 1 hour, after which the cavalry was to "ride for 2 hours and destroy another mile." The complete report included the strategic implications of a large-scale cavalry raid upon the military transportation system of the Confederacy.

Not a few of General Haupt's strictures were devoted to "supply economy." His reports tartly noted the difference between the two evacuations of Fredericksburg. During the latter, "men of my Corps loaded and removed everything of value, even to the sashes of the buildings," whereas the previous occasion's order to destroy, protested in vain by Haupt, witnessed "much gratification by some of the subordinate officers" because it "settled accounts for all deficiencies."

Confederate Supply Planning

The following year Stanton ordered Haupt to conduct "an inspection of the condition of the railroad service where the armies of the United States are operating in the Western States." The resulting report "indicated as widespread corruption as the Secretary had intimated." Details "hit some large game" and "caused remonstrance" but, as expected, Haupt's findings went unaltered to Secretary Stanton who "took a trip West" and cancelled requirements for further reports soon after. Haupt's postscript states: "I never heard in what manner the abuses were corrected," adding an anecdote of "Jeb" Stuart's capture of two Yankee contractors whom he released upon their word of honor to furnish the northern armies with really serviceable wagons. Most of those he had captured, Stuart complained, were so badly constructed as to be worthless.

One final item of "the word" as pronounced by Haupt and since overlooked may be found in his September 1862 report to General Halleck: "Supplies should not be sent to the advanced terminus before they are required. Such supplies are not unloaded; they block the track, impede retreat, and are in danger of capture or destruction. Nothing should be sent to the extreme front until it is actually needed."

Rash Conclusion

General Haupt's military career terminated under conditions no less unusual than his appointment and the conditions under which he served. He had "received no pay except for personal expenses for a portion of the time," he remained, throughout, a civilian with titular rank. Political pressure from the Governor of Massachusetts growing out of prolonged litigation over the Hoosac tunnel is the alleged cause of Haupt's relief in September 1863, without even the thanks of the Department he had signally served. Therein might conceivably lie still another "word" for democracies at war. Political litigation is an unsound basis for removing their most successful general in the field of logistics, but since that "can never happen here" we pass it up. The startling observation lies in the manner Haupt displayed both tactical and logistic acumen, that generals who failed tactically were equally deficient in their appreciation of logistic problems. Would it be unutterably rash to conclude that, whether or not "tacticians are born not made," students of the military art can study, to their everlasting benefit, lessons of logistic, no less than tactical, history?

Mountain Operations In Winter

Lieutenant Colonel Morgan B. Heasley, *Infantry*
Instructor, Command and General Staff College

MOUNTAIN operations in winter offer no insuperable barriers, but they do accentuate two major factors—terrain and weather—which tax the ingenuity of the field commander. Mountain operations in Italy, and the more recent action in Korea, have demonstrated that the tactical principles which govern other types of operations also are applicable to mountain combat. The problem confronting the field commander, then, is how to apply these principles. His mobility will be retarded and restricted, his fire power reduced, and his signal communications and supply made more difficult. Add the complexities of conducting mountain operations in ice and snow, and the commander has a real problem, to say the least.

Characteristics

Mountain warfare in winter is characterized primarily by the difficulties of movement imposed by terrain and weather. Narrow valleys and defiles limit the strength of forces that can operate efficiently within them, which, of necessity, implies decentralization of command. The road net normally is limited and full use, therefore, must be made of all existing roads and trails; however, before these can be used, the adjacent heights which afford observation must be controlled.

The terrain will dictate, to a great extent, the general scheme of maneuver, including the employment of troops to seize dominating terrain, to strike hostile routes of communications, and to protect our own routes of supply and evacuation. Tactical groups usually will operate semi-independently, but their schemes of maneuver must be based on detailed planning at the next higher echelon to ensure success.

The action of these small, semi-independent units in seizing or defending dominant heights and fighting to seize or block passes, coupled with the exercise of initiative and aggressive leadership by subordinate commanders, all become of increased importance.

Terrain

In mountain operations, the most critical terrain features are generally the heights which dominate the valleys and the lines of communication; the passes which permit movement through the mountains; and the roads and railroads which must be secured for logistical support.

Fighting in Korea has proved that our infantry divisions are capable of successfully conducting mountain operations in winter under present doctrine with only minor substitutions in weapons and equipment

Mountainous terrain offers the defender strong obstacles which he can use advantageously, with a minimum of troops, to deny the attacker use of existing routes of communication; to force the deployment of major units and the expenditure of large amounts of mortar and artillery ammunition; and to inflict maximum punishment from the comparative safety of his dug-in positions.

Success in mountain operations, therefore, depends more upon the proper adaptation of available means to the terrain than upon the use of outright power. Intelligent evaluation of the terrain will often permit a small aggressive unit to force the withdrawal of a defender by securing observation of his flank or rear, from which the withdrawal can be punished by observed fire.

Weather

When formulating plans for operations, consideration must be given to the weather, and, in particular, to the possibility of sudden changes. In addition to variations of temperature and precipitation, climatic conditions may cause zero visibility for an extended period of time. Therefore, arrangements must be made for frequent periodic weather reports and their dissemination to lower units.

The conduct of operations in extreme cold and deep snow introduces many peculiar considerations. These include such considerations as the retention of body heat in men and animals; the provision of special equipment and transportation to facilitate movement over mountain roads or trails covered with ice and snow; the preservation of supplies and equipment; the maintenance of transportation, weapons, and equipment; and the rotation of units to maintain combat efficiency.

Illustrative Example

As an example of mountain operations, let us follow the action of the 1st Cavalry Division (Infantry), in the Korean campaign southeast of Seoul, during the period 20 January through 15 February 1951. The army operation order directed a general advance to the north on progressive phase lines with the primary objective of inflicting maximum punishment on the enemy and clearing each division zone of action of all resistance. (See Figure 1.)

The terrain was extremely mountainous, with high peaks, ridge lines, and deep valleys forming a series of corridors, compartments, and cross compartments. The road net was limited, consisting of two secondary roads, one extending laterally across the division zone and the other leading generally north in the center of the zone. (See Figure 2.) The weather was changeable, with temperatures ranging from subzero at night to slightly above freezing in the daytime. Deep snow covered the valleys and north slopes of the mountains, although the southern slopes generally were bare as a result of the wind and sun.

Phase I

The first phase of the operation consisted of a reconnaissance in force conducted by a battalion-size tank-infantry task force from the 8th Cavalry Regiment, supported by light artillery. The task force made contact with the hostile covering force in the vicinity of Pangch'o-ri, forced its withdrawal to the north, and uncovered strong defensive positions on the ridge just north of Yangji-ri on the lateral road Ich'on—Kumnyangjang-ni (K town)—Suwon. A perimeter defense was set up by the task force just south of Yangji-ri (Y town), pending the arrival of the remainder of the 8th Cavalry Regiment. The regiment, reinforced with one tank company, in its initial attack, drove the enemy north of the road and seized Y town. During the night, a fanatic counterattack was repelled and the next day the regiment seized the dominant terrain controlling the approach to Y town.

Phase II

In the second phase, the 5th Cavalry Regiment effected a passage of lines through the 8th Cavalry Regiment and continued the attack to the north. When the dominating terrain north of Y town was secured by the 1st Battalion, the 2d Battalion (reinforced with one tank platoon) seized K town and made contact with the United States 3d Infantry Division on the west. The 7th Cavalry Regiment secured the Y town—Ich'on road and the division then was ready to continue its attack to the north. (See Figure 3.)

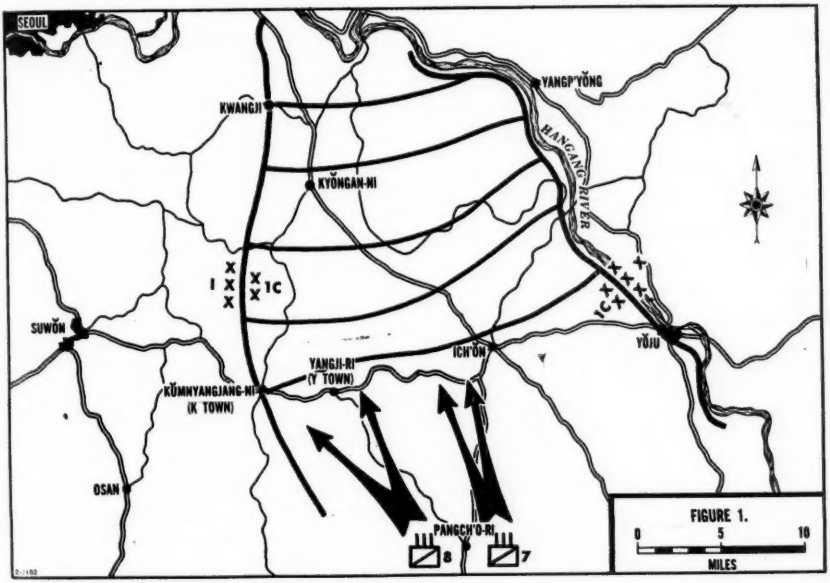


FIGURE 1.

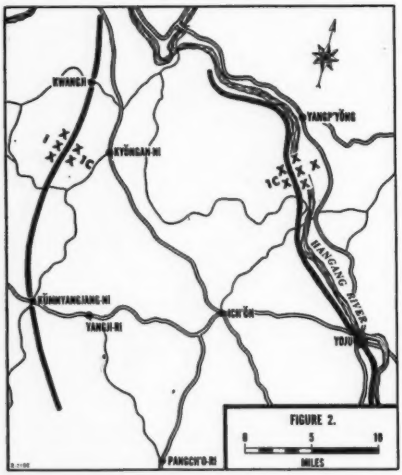
Phase III

In conducting the third phase of the operation, a system of check points was devised by numbering prominent terrain features throughout the zone of action. Each regiment, and, in turn, each battalion, was assigned a zone of responsibility and required to report the seizure of each numbered terrain feature. This system facilitated control and co-ordination and ensured that no enemy troops were bypassed who could later harass lines of communication or conduct guerrilla activities in rear areas. All villages were searched for weapons and all males of military age were either identified as villagers by the village elders or evacuated through prisoner of war channels.

Resistance

The attack to the north was characterized by the independent action of small units and the fanatic resistance by the enemy in defending obstacles or high ground that would hinder the advance. Infantry units moved from check point to check point hand carrying their support weapons, extra ammunition, sleeping bags, and rations. The reduction of enemy strong points frequently required the deployment of a company or an entire battalion. At

times, the garrison of these strong points faded away when the final assault was made, but more often fighting continued until the entire garrison had been annihilated. Units learned quickly, and, in a matter of days, the infantrymen had become expert "ridge runners." Unit commanders learned to husband the strength of their commands by finding the enemy



strong point with small patrols, thus conserving strength to "fix him, fight him, and finish him" through skillful maneuver and the employment of all available fire support. Often the finishing phase was a matter of close combat with hand grenades, bayonets, rifle butts, and sometimes bare fists. The infantry units, having the mobility and self-sufficiency to overcome the difficult obstacles of the terrain, played the dominant role in this action by seizing and holding the high ground, thus permitting supporting arms to move on existing roads and trails.

Frontal attacks were avoided whenever possible, and maneuver usually took the form of a close-in envelopment. The capture of a key terrain feature which outflanked or dominated other strong points sometimes caused the enemy to withdraw, although it was not unusual for a position to be defended to the last man.

Armor

While tanks could not follow the infantry cross country, they could, and did, give effective support by working up the draws to bring the enemy under direct fire, often on the flank or rear. Once the high ground was secured, this performance was repeated in the next valley to the north.

Artillery

The artillery displaced forward frequently and was able to furnish support throughout the entire operation. It was found advisable to assign one platoon of infantry to each firing battery for protection against infiltrating enemy troops. In addition to limitations on mobility, the artillery had two other significant problems; the difficulty of finding gun positions without too much defilade, and the adjustment of fire. The latter problem was particularly acute in the early stages, since inexperienced forward observers found the adjustment of fire on hill tops and on the bottom of narrow valleys to be extremely confusing. Slight adjustments often would cause lost rounds beyond the target or short rounds which landed near or among friendly troops. Pack artillery would have been a valuable addition in providing uninterrupted artillery support because of the mobility and high trajectory of this weapon.

Throughout the operation just described, certain lessons were learned and some conclusions were reached which may be of general interest. Although derived from experiences in the field, they substantiate doctrine now taught at our service schools.

Infantry Weapons

Our individual and crew-served weapons are all practicable for mountain war-

fare, although the use of the heavier crew-served weapons is somewhat restricted. With the exception of the heavy mortar and the 75-mm recoilless rifle, these weapons can be hand carried without undue difficulty, and ammunition supply presents no great problem.

The accuracy of the sniper rifle makes it especially useful. Because of the nature of mountain fighting, many opportunities exist for infiltration and the posting of snipers to harass the enemy and pick off his leaders.

Mortars proved to be one of the most valuable support weapons, because of their high trajectory and ability to fire on reverse slopes or on positions in deep defilade. They are easy to conceal and have great fire power, and although their use is restricted by the difficulties of ammunition supply, lateral roads and trails offer many opportunities for ambitious mortar crews to emplace their weapons in effective positions and still maintain an adequate ammunition supply.

The recoilless rifle is an ideal weapon for this type of action, especially the 57-mm, as it can be hand carried wherever troops can go. The weight of the 75-mm, however, more or less restricts its use to areas in which the ¼-ton truck can operate. The low silhouette and light weight enables emplacing these weapons at very close range. This compensates, in part, for their low muzzle velocity and increases their effectiveness against point targets, bunkers, and pillboxes.

Rocket launchers are light, portable without undue fatigue to the individual, and do not present a difficult ammunition supply problem.

The .30-caliber heavy machine gun is restricted in mobility because of its weight. Its advantage of more accurate and prolonged overhead fire is less important in mountainous terrain, and it can well be replaced by the light machine gun.

The value of tanks is limited by the terrain, which affects both their mobility and their fire power.

Demolition charges are particularly useful in creating avalanches, rock slides, and blocking mountain trails, or in clearing trails which have been blocked by the enemy.

Communications

Communications of any type are difficult. Additional radio sets, pack wire units with dispensers, and visual signal equipment are essential. Commanders must depend, to a great extent, on radio to maintain contact with subordinate units, since wire laying is difficult and messengers travel slowly and sometimes become lost.

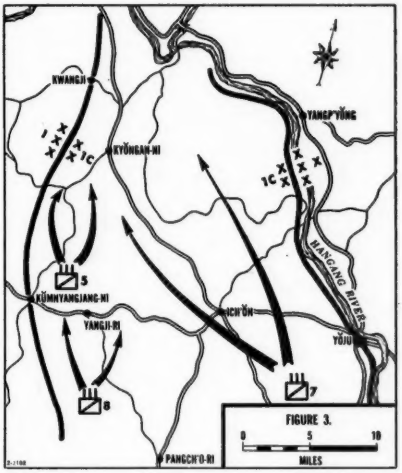


FIGURE 3.

Extra radios should be made available with which the smaller units can establish retransmission stations to compensate for the radio dead space caused by intervening mountains.

Supply and Evacuation

A workable supply and evacuation system is necessary for sustained combat.

This is especially true at the battalion level in cross-country operations where the battalion is fortunate to have even a one-way road or trail. In the operation described above, the common method was to establish a battalion supply point, from which ¼-ton trucks carried supplies forward as far as possible, from

The most critical terrain features are the lofty heights which dominate the valleys.

which point the supplies were hand carried to the using unit. Natives were used extensively in this hand packing of supplies; they possessed the inherent ability to carry heavy loads over difficult trails with little apparent effort, and they contributed materially to successful logistical support. Later, they were more formally organized into "Civilian Transport Companies" which were assigned to divisions on the basis of one company for each regiment.

Evacuation was almost a reverse process; the sick and wounded were evacuated by hand to an advance aid station, usually established at the end of the jeep trail, and then further evacuated by jeep ambulances.

Maps

Mountainous areas generally are poorly mapped, and the limited maps available are often inaccurate and misleading. Consequently, map data must be checked by visual and photo reconnaissance or preferably by ground patrols.

Combat Aviation

The hazards of flying in mountainous regions place some limitations on the use of low-flying combat aviation. Targets are difficult to pick up although they frequently can be marked with white phosphorus or colored smoke, by the ground forces, permitting the use of combat aircraft against enemy strong points, artillery positions, or reserves on reverse slopes. In many cases, the direction of close air support strikes must be accomplished through indirect means, since the functions of the tactical air control parties will be hindered by the terrain, weather, and the road net. Forward observers or personnel at an observation post in position to observe the target can direct the air strike through the forward air controller or the tactical air control party. It is essential that friendly units display identification panels to assist in the direction of attacking aircraft in the target area and to identify friendly positions.

Clothing

The winter field uniform, worn in layers, was found to be satisfactory in temperatures down to 10 degrees below zero. Troops soon learned to peel outer layers during the warm part of the day to prevent undue sweating and resultant chills.

The shoe pac is unsatisfactory as footgear unless it can be removed at night and the inserts dried out. When worn with sufficient socks to ensure warmth and

proper fit, the feet will perspire when marching or climbing and become sore and tender. Unless proper care is exercised, feet become irritated by perspiration to the point of becoming raw or blistered; at which time the soldier must be evacuated. Boots should be removed and the feet dried and aired at every opportunity. Socks can be dried by placing them next to the skin, utilizing body heat. Whenever possible, clean dry socks should be issued when the evening meal is served. Care of the feet is a command responsibility; the number of evacuees attributed to foot trouble is in inverse proportion to the amount of supervision exercised.

During the active phase of the operation, one sleeping bag for each two men was found to be sufficient as all units must maintain a perimeter defense at night which utilizes about 50 percent of the unit strength.

Food and Shelter

Getting hot food to the troops is a major, but not an insurmountable, problem in mountain operations. Prior planning and continuous supervision by unit commanders will result in the troops getting at least one hot meal a day and in most cases two. A third of a C ration or an individual combat ration will suffice for the midday meal; again, however, supervision must be exercised or the ration will be eaten when issued, or thrown away.

Shelter does not present much of a problem except during rainy periods. A slit trench lined with straw, pine boughs, or leaves, with a shelter half for a cover, will provide protection both from enemy fire and from the weather. A gully, some pine boughs, and a few minutes work will provide shelter from all weather except a driving rain. The soldier with a little encouragement will quickly learn to care for himself.

Conclusions

Existing doctrine pertaining to mountain operations in winter is sound. Fighting in Korea has illustrated the development of techniques to implement that doctrine rather than to change it.

Our present infantry division is capable of conducting such operations. While modifications and substitutions of some equipment may be necessary, no need exists for a specialized division.

All units should be trained in mountain operations to include the necessary techniques and the use of specialized or modified equipment. Tactical training exercises should be directed toward decentralized command with operations conducted by semi-independent units, emphasizing supply and evacuation, co-ordination with supporting arms, and the exercise of initiative and aggressive leadership by small unit commanders.

Korean bearers were used extensively to carry heavy loads over the difficult trails.

Troops must be rotated in order to main-

tain combat efficiency if operations are to be conducted over a protracted period. In the operation described, a fourth infantry battalion was attached to each assault regiment permitting continuous action by the rotation of assault battalions.

Units must "button up" early on dominant terrain in order to establish a perimeter defense and register close-in defensive fires during daylight hours. When a perimeter defense position is well organized, occupying troops can withstand night counterattacks and suffer a minimum of casualties.

Each division employed in the operation discussed above was successful in the conduct of mountain warfare; the enemy was surprised and defeated by the same tactics with which he gained success during the early phases of the campaign.

NEXT MONTH

Main Articles

Why Not Use The Weather? by Major Robert L. Lash; and *Tactical Use of Air Power in World War II: The Army Experience* by Dr. James A. Huston are included among the main articles.

Foreign Military Digests

The foreign digests include "Communism and Cold War Policies" from the *Journal of the Royal United Service Institution* (Great Britain); and "The Air Arm and Invasion by Sea" from the *Norsk Luftmilitaert Tidsskrift* (Norway).

Books of Interest to the Military Reader

Reviews of *Men of West Point* by Colonel R. Ernest Dupuy, US Army-Ret.; and *How Strong Is Russia?* by T. Zavalani are included.

Soviet Military Discipline

Professor Harold J. Berman and Dr. Miroslav Kerner

The views expressed in this article are the authors' and are not necessarily those of the Department of the Army or the Command and General Staff College.

This is the first of a series of two articles selected from the forthcoming book entitled "Soviet Military Justice." The second article, "Soviet Military Crimes," will appear in the July issue of the MILITARY REVIEW.

The authors gratefully acknowledge the support of the Russian Research Center of Harvard University in the preparation of this article.—The Editor.

SOVIET military law resembles that of the United States and of European countries generally in distinguishing between those military offenses which are punishable only after trial by a court-martial and those which are subject to disciplinary or nonjudicial punishment by a superior officer. The Soviet system differs from that of the United States, however, though not from that of some European countries, in defining disciplinary offenses and punishments in a special so-called disciplinary code. The Soviet disciplinary code is unusual in providing also for a large variety of specific rewards for meritorious conduct.

History

A remarkably vivid picture may be derived from the Soviet disciplinary code of the kind of military discipline and military spirit which is officially demanded of the Soviet armed forces. The picture gains perspective through a comparison of the most recent disciplinary code, that of 1946, with its three predecessors, those of 1919, 1925, and 1940.

Each of these four codes marks the end of a period in the development of the Soviet armed forces. The first was issued in the midst of the Civil War, when the Revolutionary Red Army under the leadership of Trotsky had finally emerged from infancy as an effective fighting force. The second was published under Frunze as part of his reorganization of the Soviet armies during the relatively stable period of the mid-twenties; although called "provisional," it remained in force for 15 years, surviving the succession of Voroshilov as head of the People's Commissariat for Army and Navy Affairs (in 1934 renamed People's Commissariat of Defense). The experience of the Finnish War led to the issuance of a new disciplinary code in

The code governing military discipline in the Soviet Army involves rewards as well as punishment. Despite frequent revisions brought about by a marked divergence in policies, the code is not dissimilar to our own

1940, under Timoshenko's short-lived leadership of the People's Commissariat of Defense. World War II tested this code and apparently it was found wanting; it was substantially revised in the 1946 edition, administered by the recently renamed Ministry of War. The dates of the two latest codes indicate with what rapidity the Soviet military leaders draw conclusions from combat experience and put them into effect.

Trends

The four codes contain elements of marked similarity and elements of marked diversity. Some changes introduced in the 1925 code were abandoned in the 1940 code—only to be restored in the 1946 code. The 1946 code is considerably larger than its predecessors. Nevertheless, there are some important trends which are more or less continuous. These trends may be listed as follows:

1. The de-emphasis of revolutionary ideas of class struggle, socialism, and internationalism as the basis of military discipline, and the re-emphasis of patriotism and personal responsibility.

2. The de-emphasis of camaraderie of all troops and the re-emphasis of distinctions of military rank.

3. The de-emphasis of rights of offenders and the re-emphasis of duties, including the absolute duty of obedience.

4. The general increase in severity of disciplinary penalties.

5. The increase in the severity of the procedure for imposing such penalties.

Among the most important features which all four codes have in common are:

1. The entrusting of disciplinary powers to noncommissioned as well as commissioned officers.

2. The specification of particular disciplinary powers of individual ranks.

3. The definition of rewards for meritorious conduct.

Soviet Theory of Military Discipline

It was the original Bolshevik theory that the Red Army should be motivated in its conduct by a spirit of revolutionary zeal. This theory was, in part, a response to the revolutionary situation of 1917. The Bolsheviks sought to disrupt the Russian Army, end the war, and thereby bring on an international proletarian revolution. They recruited many of their supporters from the ranks of disaffected soldiers—and especially deserters from the defeated armies first of the Czar and later of the Provisional Government; the men who, in Lenin's words, "voted for the Revolution with their feet." Also, the tactics of revolution, as taught by Marxism, called for breaking up the discipline of the old military organization and substituting for it a new military organization with a new discipline.

Reform

After the abdication of the Czar in March 1917, the Bolsheviks were among the leaders of those who clamored for drastic changes in military discipline. Partly out of sympathy for such changes, but chiefly because of the necessity of meeting the demands of a discontented and half-defeated army, the Provisional Government under Kerensky permitted self-government among the troops, restricted the powers of officers, abolished the death penalty, permitted enlisted men to sit on courts-martial, and introduced a general spirit of camaraderie into the armed forces.

These reforms were continued by the Bolsheviks for a brief period after their seizure of power. Within 6 weeks, the new regime introduced the election of officers and abolished all ranks, insignia, and decorations. Early in 1918, a "Workers' and Peasants' Army" was ordered to be formed on a volunteer basis. The official oath of this army, adopted on 22 April 1918, began with the words, "I, son of toilers and citizen of the Soviet Re-

public." "Before the toiling classes of Russia and the whole world," the new revolutionary soldier pledged himself "to direct my very action and thought toward the liberation of all workers," and "to spare neither my strength nor my life in the battle for the Russian Soviet Republic and for the cause of socialism and the fraternity of all peoples."

Return to the Old Order

It soon became apparent to the Soviet leaders that revolutionary zeal alone, however, would not win the Civil War, which at that time (April and May 1918) began to take on serious proportions. On 29 May 1918, conscription was decreed. It soon became necessary to cope with an immense number of desertions, and, on 25 December 1918, in its second decree on desertions, the Soviet Government restored the death penalty for that crime. Soldiers' self-government now came to be frowned on by the same leaders who had risen to power on its back. In 1920, Lenin told English newspapermen: "A war is a war, it demands an iron discipline."

The restoration of "iron discipline" ended the experiments started by the Kerensky government, but by no means signified the abandonment of the conception of a revolutionary army. The 1918 oath retained its significance. The leaders continued to demand the allegiance of the troops to the cause of international socialism. The difference now lay in the recognition that no army can function without strict obedience, and that strict obedience cannot be maintained effectively unless a system is established for the punishment of disobedience. These elementary truths were embodied in the 1919 disciplinary code, without, however, blurring its main thesis: that underlying obedience and punishment, underlying all military discipline, was the revolutionary class consciousness of the proletariat-in-arms. "Discipline in the Workers' and Peasants' Red Army," the code stated, "rests upon . . . boundless devotion to the socialist Soviet system and upon the consciousness of the necessity of the heaviest personal sacrifices for the sake of total liberation of the entire toiling class from the yoke of the capitalist system."

Class Consciousness

Similarly, the 1925 code stressed class consciousness as the basis of Soviet military discipline. "In the armies of monarchies and bourgeois capitalist republics," it stated, "discipline is based upon the class subjugation of the rank and file to the feudal-bourgeois officers' corps. The less class conscious a soldier of a capitalist army is, the better he complies with the duties of a defender of the capitalist system." On the other hand, "the discipline of the Red Army is a new discipline of a Workers' and Peasants' State; this discipline is not based upon class subjugation but upon the conscious understanding by all servicemen of the aims and importance of the Workers' and Peasants' Red Army. The more [class] conscious a soldier of the Red Army is, the better his duties toward the socialist state, [and] the more efficient is the Workers' and Peasants' Red Army."

Revival of Military Tradition

In the mid-thirties, significant changes took place in the Soviet theory of military discipline—changes which corresponded to a fundamental reorientation of Soviet concepts generally. The revival of Russian national military traditions was reflected in a shift of emphasis away from proletarian internationalism and class consciousness toward Soviet patriotism and toward discipline for its own sake. This shift did not take place all at once. The replacement of the 1918 oath in 1939, and the 1940 and 1946 disciplinary codes, marks successive stages in its accomplishment.

Military Oaths

The military oath of 3 January 1939, sworn by all units of the Red Army on 23 February 1939 (Red Army Day), drops the revolutionary appeal of the earlier oath. The Soviet soldier is no longer required to swear as a "son of toilers," and his oath is no longer taken in the name of the toiling classes of the "whole world"; nor must he swear to devote himself to the "freeing of all workers," or "the cause of socialism and the fraternity of all peoples." He now takes his oath simply as "a citizen of the USSR," pledging himself to be "devoted to his people, to his Soviet homeland, and to the Workers' and Peasants' State." The new text stresses the qualities of a good soldier as such; the Soviet soldier pledges himself "to be an honest, courageous, disciplined, and alert soldier, to guard strictly military and state secrets, to execute without demur all military regulations and orders of commanders and superiors." He pledges himself to defend the "land of his birth" (*rodina*) "bravely, skillfully, with dignity and honor, sparing neither blood nor life in order to gain complete victory over the enemy."

The 1918 oath is a product of a political mind, the 1939 oath of a military mind. Although it may seem verbose to a United States soldier, whose oath of enlistment is not half as long, it is doubtless an effective instrument for the moral education of Soviet troops, who must learn it by heart. Also, it is considered to have legal significance, and is cited as one of the basic documents of military law.

The 1940 disciplinary code retained some trace of the political concept of the earlier codes. "Soviet military discipline," it declared, "is founded upon the integrity of the class interests of the entire personnel of the Red Army and upon its utmost devotion to its own people and upon the feeling of high responsibility of every man in the service for the defense of the Socialist Fatherland with which he is entrusted. . . ." But in this context, "class interests" and "socialism" seem to have lost much of their general meaning and to have become terms of art to distinguish the Soviet from the non-Soviet world. "Therefore," the code provision continues, "Soviet discipline must be higher, firmer, and marked with severer and harsher requirements than discipline in other armies based upon class subjugation."

Personal Responsibility

The 1946 code abandons the notion of a special Soviet socialist military discipline. It states: "Military discipline is founded upon the consciousness of each military person of his military duty and personal responsibility for the defense of the Fatherland—the Union of Soviet Socialist Republics." No indication is made that Soviet military discipline differs from that of other countries. The definition and general requirements of military discipline are stated with reference to military discipline as such and not to a special Soviet form of it. The language and style of the general provisions of the code are strongly reminiscent of the latest prerevolutionary Russian model, the Imperial Disciplinary Code of 1869.

Distinctions of Rank

Although military necessity compelled the reluctant recognition of relationships of superiority and inferiority, the 1919 disciplinary code placed heavy stress on the spirit of equality. The terms "officer" and "general," abolished in 1918, remained absent from the code; the commanding personnel continued to be called commander, squad commander, company commander, corps commander, army commander, and so forth, according to the type of job they performed. Saluting was eliminated, and all personnel were addressed as "Comrade." Only "a mutual respect and courtesy between all military personnel" was required. All personnel

were given the right to wear "plain clothes" when off duty. It was stated in the code that "a soldier of the new army does not for a single moment lose his membership in the Communist machine." The code provided the same penalties for all personnel, and one of its most important innovations was the institution of "Comrades' Courts" where men charged with lesser disciplinary offenses were tried informally by their fellows.

The trend in all the subsequent disciplinary codes has been toward increasing differentiation of rank and insistence upon respect for rank. However, this trend became sharply defined only after 1935, when the traditional military ranks of lieutenant, captain, colonel, and the like were restored. Only in 1940 was the title "general" reintroduced, and the duty to salute imposed. In August 1943, the title "officer" was restored, together with the traditional Russian officers' insignia of rank, the gold braid epaulets. The 1946 disciplinary code declares the duty of respect toward officers, and specifically includes the requirement of the salute, as essential to military discipline.

Perhaps the most striking symbol of the re-emphasis of distinctions of rank is the restoration in the 1940 and 1946 codes of the Czarist institution of Officers' Courts of Honor. The 1940 code only mentions these courts in passing, but the 1946 code devotes an entire chapter to them. They are instituted "for the protection of the dignity and honor of the officers' rank," and they have jurisdiction over "offenses unworthy of the rank of officer which infringe military honor or are not compatible with moral rules." Generally considered to be representative of a feudal military organization, the Officers' Courts of Honor are the antithesis of the Red Army Men's Comrades' Courts, which are mentioned only in passing in the 1940 code, and not at all in the 1946 code.

The 1925, 1940, and 1946 codes have all distinguished between disciplinary penalties applicable to privates, noncommissioned officers, and officers.

More important than any of the code provisions, as an indication of the actual differences between the various ranks, and also of the relationship between officers and men, are the distinctions in privilege and remuneration. During World War II, junior officers up to and including the rank of captain lived with the troops in a very close comradeship and enjoyed relatively few advantages in respect to privileges and allowances, although the distinctions in pay were considerable. The main differentiation started with the rank of major. Generals and admirals form a special group, and the 1946 disciplinary code consistently refers to "officers and generals and admirals."

The establishment, after the war, of special military schools for the sons of officers undoubtedly has enhanced the distinctions of rank, and may even help to create a hereditary officer class in the Soviet Union.

Disciplinary Duties

The disorganization of the Russian armies in 1917 had the effect, upon the soldiers, of making them feel "free," which to them meant that they did not have to obey anybody's orders. In building a new military organization, the Bolsheviks did not immediately impose an absolute duty of obedience. Under the 1919 disciplinary code, a subordinate was required to execute only "service" orders and perform "service duties," and was excused for refusing to execute "a command which was directed against the Soviet Government" or was "obviously criminal in its nature." The 1925 code dropped the 1919 restriction on types of orders and duties to be performed, but excused refusal to obey an order if it were "criminal in its nature," eliminating the word "obviously."

The 1940 disciplinary code started a reverse trend. It provided that every com-

mand must be executed regardless of its contents, stating in Article 8 that "subordinates must unconditionally obey their commanders and superiors," and in Article 6 that "the order of the commander and the superior is law for the subordinate. He must execute it without reservation, precisely and promptly." The 1946 code preserves the language of Article 8 of the 1940 code, though it drops the old Article 6.

Some mitigation of the consequences of disobedience is provided in the 1946 code. Under the 1940 code, failure to execute any order was a crime to be tried by a military tribunal, whereas under the 1946 code minor transgressions may be regarded as disciplinary offenses at the discretion of the commander giving the order.

Further, the 1946 code somewhat lightens the 1940 provisions that "in case of disobedience, open resistance, or malicious breach of discipline, the commander has the right to take all measures of coercion, including the application of force and weapons," and that in the event of the exercise of that right the commander "shall not be responsible for the consequences." The newer code states that a commander may use a weapon only in case of utmost urgency, which permits no delay, and that every such instance must be immediately reported to the next superior officer in the chain of command. Also, the 1946 code modifies the 1940 provision that "a commander who fails to . . . take all necessary steps to enforce the order shall be tried by a military tribunal." The newer code states: "A commander who fails to take necessary steps to enforce order and discipline shall be held responsible." This change makes possible the imposition of a disciplinary penalty for such failure, and not (as in 1940) compulsory trial by court-martial.

General Duties

The first three codes dealt only in very general terms with the duties required by military discipline, embracing them in a single article of Chapter I (General Principles). The 1919 code listed as general duties: the observances of all requirements of law, strict execution of service orders of commissars and commanders, and conscientious and conscious performance of all service duties. The 1925 code added to these the safeguarding of military secrets. The 1940 code was more strongly worded than its predecessors in this respect, providing that "Soviet discipline imposes the duty of solid knowledge and precise execution without any reservation whatsoever of the military oath, military codes and regulations, and all orders and decrees of superiors and seniors; of strictly maintaining the order established in the army and of causing others to abstain from violating it; of executing conscientiously all service duties and assignments; of strictly keeping military and state secrets; and of safeguarding military property and the national domain by all means." The 1940 code also imposed on commanders the duty "continuously to inculcate in his subordinates the spirit of execution of all requirements of military discipline," and stated that "the commander is responsible for his subordinates; he must always be exacting, severe, and just to them; he must inflict penalties upon those who are indolent or who violate discipline; and must encourage those who display merit."

On the general duties of all military personnel, the 1946 code requires, in addition to the requirements of the 1940 provision, each military person to "staunchly endure all burdens and privations of military service, not to spare his blood or life, to be honest, truthful, conscientiously to learn military art, and strictly to observe regulations of military courtesy and the duty to salute." The duties of commanders are stated more or less as in the 1940 code, with the omission of the statement

that the commander is responsible for his subordinates.

Report of Irregularities

A new and unusual provision of the 1946 code states that servicemen who discover plunder or spoilage of military equipment, illegal use of funds, or other apparent misdeeds in the military procurement system shall be required to report such matter in the chain of command, "and [shall have] the right to send a written report to a superior commander." If, by the help of such reports, abuses or deficiencies are removed, the serviceman is to be given a reward, but if he intentionally makes a false report he "shall be held responsible." On the other hand, "a commander who committed an apparent injustice or illegal act toward a subordinate because of his complaint or report shall be held strictly responsible."

Penalties and Rewards

A disciplinary penalty is defined in the 1940 code as "a punishment imposed upon men in the service by authority of the direct or immediate superior to whom such men are temporarily or permanently subordinate." This definition is for some reason omitted in the 1946 code and no substitute is offered. In both codes, however, it is stated that "disciplinary penalties shall be inflicted for acts committed by a serviceman in violation of his service duties or of the public order, if such acts are not reserved for trial by courts-martial." The decision as to whether an act of a serviceman merits a criminal trial and not merely disciplinary punishment rests in part with the superior, who in borderline cases has the right to determine whether a disciplinary punishment is sufficient or whether the delinquent shall be tried by court-martial.

The omission in the 1946 code of the earlier provision that "the disciplinary penalty is an educational measure" indicates the weakening of one of the more significant of the revolutionary ideals. In fact, the severity of the penalties has in general (though not in all respects) increased with each successive code.

The 1919 code provided for six types of penalties, the last of which was of a general character. These were applicable to all ranks. In 1925, more than 10 types of penalties were listed for each of three groups of personnel, and in 1940 approximately the same number were listed for five groups. The 1946 code presents a less diversified system which corresponds closely to that of the Imperial Disciplinary Code of 1869.

The three latest codes have listed separately the penalties which may be imposed on different ranks. The 1946 code provides separate sets of penalties for privates and corporals, for sergeants and technical or master sergeants, for noncommissioned officers in extra-term service, for officers, and for generals and admirals.

A Comparison

While the 1946 code relaxes some features of the 1940 code, nevertheless, taken together, the penalties of the 1940 and 1946 codes are considerably more severe than those of the two earlier codes. Also, certain educational penalties of the 1925 code applicable to privates are conspicuously absent in the later ones: placing of the delinquent's name on a blackboard for 1 month or less, and reading of his record in front of the formation or at a festival gathering. The most notable change is the granting of power to a superior to reduce a subordinate (including officers) in rank by way of disciplinary penalty. The 1940 code spoke of reduction to the next lower grade, but the 1946 code removes this limitation.

Finally, the 1946 code introduces for the first time a general authority in officers of the grades of regimental commander or above to remove delinquent subordinates from their commands. The

Penalties Provided by the Disciplinary Codes

1925 Code	1940 Code	1946 Code
PRIVATES AND CORPORALS		
1. Warning 2. Reminder 3. Reproof 4. Reprimand 5. Personal reprimand in front of unit 6. Restriction to quarters up to 1 month 7. Extra detail up to five assignments 8. Confinement up to 20 days 9. Reduction or elimination of regular furlough 10. Placing of name on blackboard for a period up to 1 month 11. Reading of record of offenses in front of unit 12. Reading of record of offenses at festival gathering	1. Personal reprimand 2. Personal reprimand in front of unit 3. Restriction to quarters up to 6 weeks 4. Extra detail up to eight assignments 5. Ordinary confinement up to 20 days 6. Strict confinement up to 10 days 7. Handing over to Red Army Men's Comrades' Court	1. Personal reprimand 2. Restriction to quarters up to 1 month 3. Extra duty (excluding guard or sentinel duty) or extra detail up to five assignments 4. Ordinary confinement up to 20 days 5. Strict confinement up to 15 days 6. Reduction in rank (for corporals)
SERGEANTS AND TECHNICAL OR MASTER SERGEANTS		
1. Warning 2. Reminder 3. Reproof 4. Personal reprimand 5. Personal reprimand 6. Extra detail up to five assignments 7. Confinement up to 20 days 8. Omission of a presentation for promotion 9. Demotion in command	1. Personal reprimand 2. Restriction to quarters up to 1 month 3. Extra detail up to eight assignments 4. Reprimand in order of the day 5. Ordinary confinement up to 20 days 6. Strict confinement up to 10 days 7. Handing over to Sergeants' Comrades' Court 8. Reduction in rank 9. Reduction in command 10. Demotion from command with reduction in rank to private	1. Personal reprimand 2. Restriction to quarters up to 1 month 3. Extra duty (excluding guard or sentinel duty) or extra detail up to three assignments 4. Ordinary confinement up to 20 days 5. Strict confinement up to 10 days 6. Demotion in command 7. Reduction in rank NOTE: penalties 2 and 5 are not applicable to technical sergeants and chief petty officers
NONCOMMISSIONED OFFICERS IN EXTRA-TERM SERVICE		
Not in a separate group	1. Personal reprimand 2. Extra detail up to four assignments (excluding sergeant majors) 3. Reprimand in order of the day 4. Reduction of a regular furlough by the maximum number of 15 days 5. Ordinary confinement up to 15 days with the obligation to perform duty and a reduction of 25 percent of the basic daily pay for every day of confinement 6. Strict confinement up to 10 days with a 50 percent reduction of the daily basic pay for every day of confinement 7. Handing over to Sergeants' Comrades' Court 8. Reduction in rank of one grade 9. Reduction in command 10. Transfer into reserve	1. Personal reprimand 2. Ordinary confinement up to 20 days 3. Reduction in rank 4. Placing in reserve for the remainder of enlisted period

1925 Code	1940 Code	1946 Code
OFFICERS		
1. Warning 2. Reminder 3. Reproof 4. Strict reproof 5. Personal reprimand 6. Written personal reprimand 7. Reprimand in the order of the day 8. Personal reprimand in officers' assembly 9. Extra detail up to two assignments 10. House arrest up to 7 days 11. Confinement up to 20 days	1. Personal reprimand 2. Reprimand in the order of the day 3. Reduction of a regular furlough by the maximum number of 15 days 4. House arrest up to 15 days with the obligation to perform duties and a 50 percent reduction of the basic daily pay for every day of arrest 5. Postponement of the regular promotion for 1 year 6. Handing over to Comrades' Court of Honor 7. Loss of seniority allowance for a period up to 6 months 8. Removal from command 9. Reduction in rank for one grade 10. Demotion in command 11. Transfer into reserve or retirement	1. Admonition and personal reprimand either oral in the officers' assembly or written in the order of the day 2. House arrest up to 20 days 3. Confinement up to 20 days 4. Warning of inadequate discharge of duty 5. Demotion in command 6. Reduction in rank
GENERALS AND ADMIRALS		
Not in a separate group	1. Warning 2. Personal reprimand 3. Reprimand in order of the day 4. Loss of seniority allowance for a period up to 6 months 5. Removal from command 6. Transfer into reserve or retirement	1. Admonition and personal reprimand, oral or written in order of the day 2. Warning of inadequate discharge of duty 3. Reduction in command

authority is restricted to "urgent cases not permitting any delay," the action must be reported and explained immediately, and the superior who removes a subordinate from his command without adequate reasons may be held "responsible" for his decision.

Rewards

One of the most significant innovations of the Soviet disciplinary codes is the specification of rewards for meritorious conduct. In the first code the chapter on rewards preceded that on punishments, the emphasis thus being placed on incentives rather than repression. The 1925 code put the chapter on punishment first, but in the following chapter listed 13 rewards, including promotion, a special written commendation certifying the particular accomplishments performed, furlough, decoration, a personal photograph in front of the unfurled banner of the unit, and a personal, engraved firearm. The 1940 code reduced the number of rewards to six, omitting written commendations, photographs, and the like, and introducing rewards of more prosaic character, including a valuable gift or sum of money, promotion, and remission of a previously imposed disciplinary penalty. The 1946 code retains these rewards and restores some of the earlier ones. It also divides rewards into two groups: those for privates, noncommissioned officers, and warrant officers; and those for commissioned officers and generals and admirals.

In the first of these two groups are:

1. Oral commendation in front of the formation or in the order of the day.

2. Remission of a previously imposed disciplinary penalty.

3. A pass, not exceeding 2 days.

4. A furlough, not exceeding 10 days including travel time.

5. Testimonials of merit for graduates of training schools or for men released into the reserve.

6. Valuable gifts or money rewards.

7. A personal photograph in front of the unfurled unit banner.

8. Notification of the man's hometown or former place of employment of his exemplary performance and of the rewards granted to him.

9. Military decoration.

In addition, the names of graduates of schools may be placed on the honor roll of the school.

Imposition of Penalties

The procedural requirements for "company punishment" are, by the very nature of the punishment, not very elaborate in any system of military law; otherwise, the distinction between judicial and nonjudicial punishment would tend to disappear and the enforcement of discipline speedily and on the spot would be weakened. However, unless certain procedural safeguards are maintained, the imposition of disciplinary penalties may become entirely arbitrary and tyrannical.

Complaints

Among the most important procedural requirements of the 1946 Soviet disciplinary code are: that a penalty must be imposed within 5 days after the offense was committed, that the penalty must be executed within 1 month after its imposition, that the penalty imposed must be proportionate to the importance of the offense, and that a superior who exceeds his disciplinary powers shall himself be liable to disciplinary or judicial punishment. The right of complaint against the imposition of a disciplinary penalty, which is the chief safeguard for the subordinate, is quite restricted. He may complain against the severity of the penalty only if the superior has exceeded his powers. Further, a superior commander may not reduce a disciplinary penalty imposed by a junior commander, but he may increase it although there has been no complaint or appeal. Finally, the provision of the earlier codes that if a complaint is not dealt with by the immediate superior within a certain time (in the 1940 code, 15 days) the complainant may appeal to the next higher authority is abolished in the 1946 edition.

On the other hand, the 1946 code omits the 1940 provision that a complaint against a disciplinary penalty must be made within 1 month from the day the illegal or unfair treatment took place. Any serviceman may place a complaint against an illegal decision of his commanders regarding his person, against infringement of his service rights and privileges, and against the withholding of allowances due him. The complaint has to be placed with his superior commander and may be made orally or in writing. Complaints by groups are forbidden. Complaints may not be made while in a formation, on guard or sentinel duty, or on detail. The making of an obviously wrong complaint with the intention of discrediting the superior is punishable by disciplinary penalty or by court-martial.

All complaints must be recorded in a special "Book of Complaints," the pages of which must be properly numbered, sewn together, sealed, and certified by the commander of the unit. Apparently the legislators do not have great confidence in the reliability of superior officers in this regard.

The 1946 code omits the earlier rule prohibiting the imposition of a discipli-

nary penalty upon a delinquent in the presence of personnel subordinate to him, but states generally that humiliation of the offender should be avoided.

Jurisdiction

The right to impose disciplinary penalties rests with commanders, starting with squad leaders and going up to the Minister of War himself. A squad leader may impose on his subordinates the penalties of personal reprimand, deprivation of one regular permit to leave quarters, and assignment of one extra detail. The next higher commander, that is, the deputy platoon commander, has slightly greater powers in that he may deprive a delinquent of two regular permits to leave quarters, and may assign two extra details. Sergeants and platoon commanders have somewhat greater powers of punishment. Company commanders, who generally in European and American armies are the lowest ranking personnel with disciplinary jurisdiction, may:

1. Issue a personal reprimand.
2. Restrict to quarters for 1 month.
3. Assign five extra details to privates and three to noncommissioned officers.
4. Order ordinary confinement of privates up to 10 days, noncommissioned officers up to 5 days, and warrant officers up to 3 days; strict confinement of privates up to 4 days and noncommissioned officers up to 2 days. In respect to his junior officers, he may issue a personal reprimand orally, and place under house arrest or in the guardhouse for 2 days.

Courts of Honor

Courts of Honor are under the jurisdiction of commanders of regiments and larger units. The court consists of five members and two deputies, elected annually by secret ballot of the officers' assembly. Courts of Honor deciding a case of a junior officer must contain at least one senior officer, but the lowest rank eligible is a captain. No officer may be judged by a lower ranking officer.

A decision of a commander to turn a case over to the Court of Honor may be made only after a preliminary investigation. Court sessions are public, and the presence of the accused is required. The decision is made in a closed session by a simple majority.

The court may impose the following penalties:

1. Admonition.
2. Personal reprimand.
3. Strict personal reprimand.
4. Recommendation of postponement of regular promotion.
5. Recommendation of demotion in rank or command.
6. Recommendation of transfer to another unit.
7. Recommendation of transfer to retirement.

An appeal may be taken to the convening officer only, and if he disapproves the decision, a new trial must take place.

UNITED NATIONS FORCES IN KOREA

The troops under the command of General Ridgway, including not only our own but those of 16 other free nations, constitute, I believe, the most significant army on the face of the globe today. We are all familiar with the splendor of their heroic deeds.—

President Harry S. Truman

COMMUNIST aggression in Korea, which brought with it renewed awareness of common interests and common peril to the free nations, was, and is being, met and challenged by the firm determination of the United Nations.

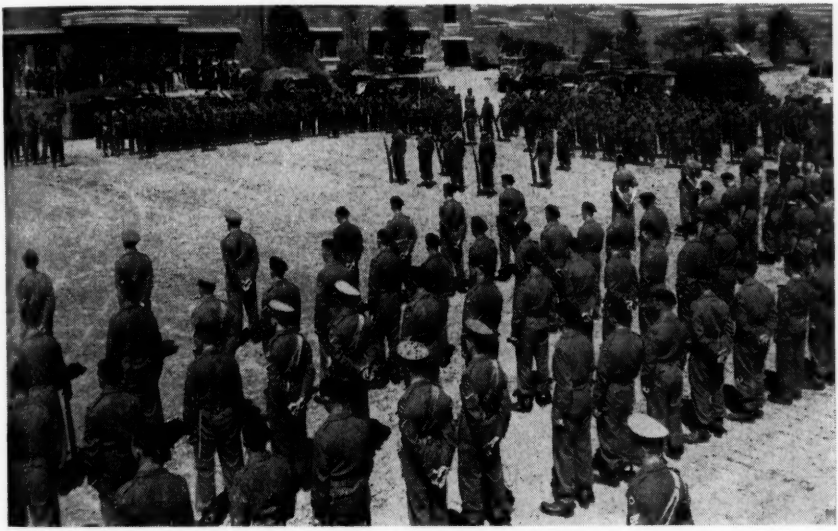
The United Nations polynational and polylingual military forces in Korea now include personnel from Australia, Belgium, Canada, Colombia, Denmark, Ethiopia, France, Great Britain, Greece, India, Luxembourg, the Netherlands, New Zealand, Norway, the Philippines, Sweden, Thailand, Turkey, the Union of South Africa, and, of course, the United States and the Republic of Korea.

Despite the fluctuations in fighting strengths, in proportion, all the United Nations forces have suffered large numbers of casualties; they also have—in the case of the British, the Dutch, the French, and the Turks—won unit citations for extraordinary achievements in battle, and have, all things considered, made a substantial contribution to the accomplishments of the total United Nations forces.

For this impressive record, the world owes its thanks to the people who made it possible: the men who have fought or are fighting in Korea, and, especially, to those who have made the greatest of all sacrifices. If these men had failed in Korea, the free world could never have built the unified strength that it has during the past year and a half. If these men had failed, no one would be able to state truthfully, as General Ridgway has, the belief that "history may some day record that the crest of the Communist wave of cold-blooded aggression was broken against the arms and the will to fight of the United Nations battle team in Korea. . . ."

The people of the free world, realizing the sacrifices that have been and will be required of them, although divided on many issues, are co-operating in a military operation in Korea to stem the tide of Communist aggression. They realize that merely to desire peace does not guarantee it, and that if freedom is to survive, it must be stronger than freedom's enemies.

The people of the free world, realizing the sacrifices that have been and will be required of them, are co-operating fully in a military operation in Korea to stem the rising tide of Communist-inspired aggression



Above, United Kingdom, Canadian, Australian, and Belgian units participating in a ceremony in which the American Presidential Unit Citation was awarded to the Gloucestershire Battalion, Royal Artillery, for a heroic stand against Communist forces. Below, ROK recruits leaving a train station bound for the front.—Department of Defense photos.

Above, a doctor interviewing a patient at the Swedish Hospital in Korea while a nurse takes notes. Below left, infantrymen of the Royal Australian Regiment climbing makeshift ladders to cross a partially wrecked bridge in Korea. Below right, soldiers of the 21st Thailand Regiment training on the 61-mm mortar.—Department of Defense photos.

Above, taking cover from Chinese Communist fire, Puerto Rican infantrymen of the 65th RCT, United States 3d Infantry Division, find a haven in a Chinese-made trench along the west central front in Korea. Below, a United States 7th Infantry Division gun crew supporting other United Nations troops in Korea.—Department of Defense photos.

Practical Aids To Logistic Planning

Lieutenant Colonel Herbert A. Jordan, *Infantry*
Instructor, Command and General Staff College

"IT IS NOT what we do that counts, but what we do over," has been said by many logistic planners. Much of the "do over" can be eliminated by the adoption of a realistic, systematic process at the beginning of planning operations. A plan for planning saves countless man-hours of labor in the preparation of a sound and understandable end product.

A firm and complete set of rules and procedures, which have equal application to all logistic plans, cannot be established since many factors will vary; such as the mission, the area of operations, the type of operations to be supported, and the personality of the commander. However, a number of fundamentals, if properly applied, will assist materially in the preparation of logistic plans to support any type of tactical operation.

The purpose of this article is to point out a few principles, short cuts, and time savers which were applied successfully in planning operations in the past, and which may, with modifications, assist in developing future plans. Many of the factors shown in the examples will not be applicable in future operations, nor will the procedures outlined be acceptable or complete in all cases. Nevertheless, they may serve as a guide in developing similar aids to meet the requirements of a particular planning staff.

Application of the Principles of War

The nine principles of war are generally considered in terms of tactical and strategic operations. However, these principles have equal application to logistics, therefore, they should be carefully considered and applied in all logistic planning. The following principles are particularly important to the logistic planner:

1. *The Objective.*—All planning should be focused on the goal or the mission to be accomplished. The mission of the force, as a whole, must be carefully analyzed and interpreted in terms of logistical support missions. A complete and clear understanding of the mission is of paramount importance to enable the preparation of logistic plans which will adequately support the proposed operation. The mission may be simply stated as follows: "To seize the area X prepared to continue operations on the northern coast of Y." A mission so stated would imply a logistical mission of providing normal support for the seizure of the area X plus base development of the area to include personnel, matériel, and facilities to train, mount, and support forces in subsequent amphibious or other extensive operations. Any questions pertaining to the mission should be resolved before detailed planning is accomplished. Each logistic planner may well have the word *mission* posted in a

conspicious place as a constant reminder to guide him in his planning.

2. *Simplicity.*—Plans should be direct, clear, definite, and brief. However, clarity should not be sacrificed for brevity. Neither should volume be a measure of clarity and completeness.

3. *Unity of Command.*—This principle implies co-operation and team play. The logistic planner is guided by the same mission as the tactical planner. G3 and G4 planners have a common goal and must work, co-ordinate, and co-operate with each other to the utmost.

4. *Maneuver.*—The rapid movement or displacement of troops dictates an equally rapid displacement of supplies and service support.

5. *Mass.*—This principle includes superiority of supply and service support to match superiority of combat power.

6. *Economy of Force.*—In order to provide the required mass in critical areas, economy of force must be exercised in less critical areas. Shortages of matériel and service troops will habitually necessitate plans based on minimum essential service support. Economy of force can be promoted through maximum utilization of civilian and prisoner of war labor, exploitation of local resources, use of labor-saving devices, assignment of secondary or dual missions to units, and supply economy.

7. *Security.*—Security of logistical installations against enemy action and pilferage must be provided. Dispersion, concealment, use of guards, training of service units in combat subjects, and employment of available tactical units in security roles should be considered.

Preparation for Planning

Advance information concerning proposed planning requirements is usually available prior to the receipt of a detailed planning directive. Immediately upon receipt of this advance information, the following action should be taken:

1. *Acquire necessary background information and reference material.* A basic library of the publications listed on page 47 should satisfy the initial requirements for reference material. Other documents can be added as required.

2. *Initiate development of a plan for planning.*

Plan for Planning

A guide for planning may consist of a standing operating procedure (SOP) and a detailed schedule based on deadlines established in the planning directive. The planning SOP can be prepared prior to the receipt of the detailed directive. Any factors included in the directive which are not covered in the SOP should be disseminated to all planning personnel immediately upon their receipt. Figure 1 is a sample SOP for a planning group.

Each technical service normally follows a separate format in the preparation of its respective plan to support the logistic plan. This is because of differences in functions, methods of operation, and types of organization among the various technical services. However, the establishment of a standard format which can be used as a guide by all technical services, and needs be modified only to the extent necessary to meet the individual requirements of each service, will assist the G4 in reviewing these plans and will facilitate

A definite plan for planning will save countless man-hours devoted to unnecessary labor and provide a guide for the preparation and development of a sound, comprehensive, and understandable logistic plan

SAMPLE SOP

CLASSIFICATION

Headquarters

PLANNING MEMORANDUM)
NUMBER)

Date

STANDING OPERATING PROCEDURE FOR LOGISTIC PLANNING

1. GENERAL.
   a. *Purpose.*—This standing operating procedure standardizes normal procedures for logistic planning; and applies unless otherwise prescribed.
   b. *Application.*—Variations in missions, operating procedures, and other factors preclude the establishment of fixed procedures for all technical services. The procedures prescribed herein will be followed as closely as possible.

2. PLANNING.
   a. Concurrent planning will be employed to produce a co-ordinated and workable plan and obviate last-minute changes.
   b. Normal planning sequence will be as follows:
      (1) Receipt of planning directive from higher headquarters.
      (2) G4 obtains G3 concept of the operation, task organization, and completion deadline.
      (3) G4, with the technical services, makes a logistic estimate to determine if the operation can be supported.
      (4) G4, with the technical services, prepares the logistic plan.
      (5) G4 obtains approval of the logistic plan.
      (6) Technical services prepare their respective plans to support the logistic plan and submit the plan to G4 for approval.
      (7) G4 prepares the Base Development Plan. Preparation and submission of technical service appendixes and inclosures to the Base Development Plan follow the same procedure as covered in par (5) and (6) above.

3. FORMAT.
   a. Basic technical service plans will follow the format and check list in Figure 2, as closely as possible. Portions of the sample format which are not applicable will be omitted. Additional subparagraphs may be added under major paragraph headings to provide complete coverage of all aspects of the operation.
   b. Appendixes and/or inclosures to the basic technical service plans will follow the format most appropriate for the subject being covered.

4. PREPARATION.
   a. All plans will be prepared on legal size paper.
   b. Draft plans will be double spaced.
   c. Draft plans will be prepared in only a sufficient number of copies to meet the internal requirements of the technical service staff sections, plus one copy to G4 for approval.
   d. Plans will be brief, clear, and simple. Inclosures will be used to preserve brevity, clarity, and simplicity within the body of the plan or when the application of the information is limited or technical. The applicable paragraph in the body of the plan may contain only a reference to the inclosure when inclosures are used.
   e. Inclosures will be referred to in the same manner as appendixes as follows:
      Inclosure 3 (Class IV Project Requirements).
   f. Abbreviations will be used only if complete understanding is assured. Abbreviations will be limited to those contained in SR 320-50-1 and Appendix V, FM 101-5. The use of highly technical military language and unfamiliar abbreviations will be avoided.
   g. The military grid reference system will be used with all UTM (Universal Transverse Mercator) and UPS (Universal Polar Stereographic) overprinted maps. The British grid system will be used in areas which have not been converted to these two systems.
   h. The copy of the draft plan submitted to the G4 for approval will include a cover sheet appended to each annex, appendix, or inclosure as follows:

Headquarters

Date

Title of plan, annex, appendix, or Inclosure

Staff action responsible for preparation

Prepared by ---
Name of officer responsible for preparation

Co-ordinated with ---
List agencies or activities with whom plan has been co-ordinated

Concurrences ---
Initials and titles of officers who have concurred

FIGURE 1.

Approved: ---------- ----------
Date Initials of responsible chief of the technical service staff section

Approved: ---------- ----------
Date Initials of G4

Approved: ---------- ----------
Date Chief of Staff or Deputy Commanding General

Short title

5. POLICIES.

a. All statements referring to responsibilities or tasks to be performed by the US Air Force, US Navy, or allied forces, and which are not covered in directives from higher headquarters or which have not been agreed to by the service concerned will be prefixed by the statement "It is anticipated that." Example: "It is anticipated that the US Air Force, as directed by the theater commander, will: *a.* Establish an air matériel area in the objective area."

b. All plans will be based on the maximum utilization of civilian and prisoner of war labor to supplement or replace service troops.

c. Service troop requirements will be computed on the basis of minimum essential requirements. Luxury service will be eliminated or reduced wherever possible in order to reduce the ratio of service troops to combat troops.

d. Service troops normally will be responsible for the security of their respective installations and must be prepared to assist in the defense of adjacent installations. Training in tactical subjects will be concurrent with the performance of their primary service mission.

e. Plans must consider the enemy's capability of employing mass-destruction weapons. Dispersion and the selection of alternate sites will be accomplished in accordance with the latest Department of the Army doctrine.

f. Local procurement will be accomplished to the fullest practicable extent consistent with maintaining the local economy.

g. Maximum use will be made of existing buildings and facilities to reduce construction requirements.

h. Balanced and commodity loaded ships normally will be used during the early phases of an operation until commercial loading methods become feasible.

i. Rail transportation will be exploited to the maximum extent to economize on other means of transportation.

j. The establishment of supply control and inventory procedures will be concurrent with the establishment of all supply installations.

k. The cannibalization of equipment will be accomplished only when the major item cannot be restored to its original use.

l. Depots and supply points will be assigned numbers within the following blocks assigned to each technical service:

	Depots	*Supply Points*
Chemical	300-399	1300-1399
Engineer	500-599	1500-1599
Medical	800-899	1800-1899
Ordnance	900-999	1900-1999
Quartermaster	1-99	1000-1099
Signal	100-199	1100-1199
Transportation	200-299 (Railheads)	1200-1299 (Truckheads)

m. The evacuation policy will be based on the return of casualties only as far to the rear as is necessary to complete treatment prior to restoration to duty.

n. Plans will envisage the maximum use of air evacuation, including the use of helicopters.

o. Reports required of subordinate units or installations will be kept to an irreducible minimum.

p. Normal sequence of basic plan, annexes, appendixes, and inclosures will be as follows:

Basic Plan—Operation Plan

Annex—Logistic Plan
Appendixes—Technical Service Plans to support Logistic Plan
Inclosures—Attachments to Technical Service Plans
Appendix—Base Development Plan
Inclosures—Technical Service Plans to support Base Development Plan
Appendix—Base Development Plan covering satellite operations
Inclosures—Technical service plans to support satellite plan.

Signature

DISTRIBUTION:

CLASSIFICATION

FIGURE 1 (continued).

SAMPLE FORMAT AND CHECK LIST
CLASSIFICATION

Headquarters

Date

Appendix ---- (----) to Annex ---- (Logistic Plan) to Operation Plan ----
Technical Service

Maps: (Enter map reference only if plan includes specific reference to geographical locations by map co-ordinates; ref par 105*a* (3), FM 101-5.)

1. GENERAL.

a. References. (List any directive or standing operating procedure other than Department of the Army regulations which contains information pertaining to or supplementing this plan.)

b. Assumptions. (Enter any matters which are assumed, though not known to be true and which affect the plan. Normally include only those factors beyond control of friendly forces such as enemy activity and weather.)

2. MISSION. (Enter the technical service mission for this particular operation; ref par 2, Form 6, page 146, FM 101-5.)

3. RESPONSIBILITIES. (Enter responsibilities of own, higher, lower, and adjacent headquarters in separate subparagraphs, including responsibility for logistical support of other components of the armed forces and allies.)

4. POLICIES AND PROCEDURES.

a. Policies. (Enter broad policy statements covering principles on which plan is based, dispersal of supplies and installations due to radiological implications, utilization of civilians and prisoners of war, tactical training, and employment of service troops.)

b. Procedures. (Enter in separate subparagraphs procedures to be followed in furnishing support to ground troops, Air Force, Navy, allied forces, and refugees. Refer to SOP if applicable.)

5. TROOPS AND LABOR.

a. Personnel. (Enter service troop locations or refer to Incl 1, ("Troop Utilization").)

b. Operations.
(1) Troops. (List secondary missions of units.)
(2) Organization. (Enter organization of groups and battalions and their operational control.)
(3) Training. (Cover training missions, on-the-job training, and tactical training.)

c. Labor. (Ref par 261, FM 100-10.)
(1) Civilian. (Cover utilization of civilian labor to augment or replace service units and mobile labor units.)
(2) Prisoners of war. (Cover utilization of prisoner of war labor including the method of administration and supervision.)

6. INSTALLATIONS. (Cover locations and types of installations and storage space requirements, both open and covered, by phases. May be covered in an inclosure.)

7. SUPPLY AND MAINTENANCE.

a. Supply. (Ref Chapter 4, FM 100-10.)
(1) Supplies and equipment to accompany troops.
(a) Deviations in authorized allowance of equipment.
(b) Days of maintenance supplies and equipment.
(2) Miscellaneous supply. (Cover supply of US Air Forces, Navy, allied forces, Red Cross, and military government.)
(3) Emergency supply.
(4) Class IV project requirements. (Refer to Incl 3; ref par 150, FM 100-10.)
(5) Requisitioning procedures. (Cover any special requisitioning procedures applicable to this operation, period of automatic supply, and the target date for submission of first requisition; ref par 173, FM 100-10.)
(6) Levels of supply. (Include levels of supply by class and rate of build-up; ref par 151, FM 100-10.)
(7) Local procurement. (Include statement as to extent that local resources will be exploited, information on availability of specific materials if known, and reference to existing policy and procedure publications on local procurement; ref par 157, FM 100-10.)

FIGURE 2.

(8) Documentation. (Cover any special accounting and inventory procedures; ref par 171, FM 100-10.)
(9) Include any instructions pertaining to supplies or equipment which require special procedures, such as map supply and chemical munitions.)

b. Maintenance. (Ref Section I, Chapter 7, FM 100-10.)
(1) (Include locations and dates of opening of depot maintenance facilities, or cover in separate inclosure.)
(2) (Cover any detailed instructions relative to the maintenance of Navy, Air Force, or allied equipment by Army Installations.)
(3) (Include any detailed instructions relative to the maintenance of Army equipment by the Navy, Air Force, or allies.)

c. Salvage. (Cover location of salvage collecting points and dumps, and policies concerning reclamation and cannibalization; ref par 191, FM 100-10.)

8. EVACUATION AND HOSPITALIZATION. (Ref Chapter 5, FM 100-10.)

a. Evacuation.
(1) Evacuation policy. (Enter evacuation policy for this operation, by phase; ref par 198, FM 100-10.)
(2) Evacuation of Navy, Air Force, allied civilian, and prisoner of war personnel.
(3) Responsibilities. (Enter in separate lettered subparagraphs the responsibilities of Navy, Air Force, higher, subordinate, and own headquarters; ref pars 208 and 209, FM 100-10.)
(4) Requirements. (Enter estimated evacuation requirements by month including estimated percentage evacuated by air and sea-borne transportation.)

b. Hospitalization. (Ref pars 197 and 206, FM 100-10.)
(1) Fixed hospitals. (Cover policy on establishment, construction policies and standards, facilities to be provided, and estimated time fixed hospitals will become operational.)
(2) Mobile hospitals. (Cover policy on establishment, missions, and attachments.)
(3) Responsibilities. (Enter in separate numbered subparagraphs the responsibilities of the various headquarters in connection with hospitalization.)

c. Preventive medicine. (Cover any detailed instructions pertaining to preventive medicine procedures, immunization, public health, sanitation, and responsibilities of commanders; ref par 90, FM 100-10.)

d. Research and development.

9. TRANSPORTATION. (Ref Chapter 6, FM 100-10.)

a. General. (Include general information on policies and responsibilities.)

b. Highways. (Ref Section III, Chapter 6, FM 100-10.)
(1) General. (Include general information on primary, secondary, and all-weather road nets and estimated traffic loads.)
(2) Main supply roads. (Cover designation of main supply roads.)
(3) Traffic regulations. (Cover circulation, restriction on use, and control; ref par 225, FM 100-10.)

c. Rail. (Ref Section IV, Chapter 6, FM 100-10.)
(1) General. (Include general information on type railroads to be operated.)
(2) Organization. (Cover the organization of railway service, as well as supervision and control.)
(3) Estimated rail traffic loads. (Cover rail capacity requirements by period.)
(4) Rolling stock requirements and availability. (Cover total locomotive and rolling stock requirements to move required tonnages, total availability, and balance required from other sources.)
(5) Trackage. (Cover daily train capacity over available trackage.)
(6) Fuel and lubricants. (Cover fuel and lubricant requirement for administrative purposes and estimated amounts locally available.)
(7) Maintenance and repair. (Cover location of maintenance and repair facilities, procurement of spare parts, etc; ref par 228, FM 100-10.)

d. Water. (Ref Section II, Chapter 6, FM 100-10.)
(1) Ports. (List ports and beaches in use or to be placed in use by phase, facilities required at each port by phase including berths, hardstandings, freight classification facilities, access roads, railroads, and tanker discharge facilities. Include information on lighterage, tugs, floating cranes, shore cranes, and materials handling equipment; number and kinds of ships to take on water; and maintenance of small craft, heavy equipment, materials handling equipment, and facilities. Cover plans for augmentation of port operating units and personnel. Include assignment of subports, and Class IV requirements for port reconstruction and maintenance if not covered in par 7; ref pars 220 and 221, FM 100-10.)

FIGURE 2 (continued).

(2) Ocean shipping. (Cover responsibilities, policies, and restrictions; ref par 219, FM 100-10.)
(3) Coastal shipping. (Cover responsibilities, policies, and restrictions; ref par 222, FM 100-10.)
(4) Inland waterways. (Cover use, responsibilities, policies, and restrictions; ref par 223, FM 100-10.)

e. Pipe lines. (Cover locations, size, and capacities by phase; and bulk storage facilities by size, location, and phase; ref Section V, Chapter 6, FM 100-10.)

f. Air. (Include policies, location of airfields by phase, capacities available, procedures, restrictions, and responsibilities; ref Section VI, Chapter 6, FM 100-10.)

g. Movement control. (Ref par 242, FM 100-10.)

h. Staging areas. (Cover establishment and operation of staging areas; ref par 217, FM 100-10.)

10. SERVICE. (Cover in separate lettered subparagraphs general information, policies, and procedures, including, but not limited to, the following list; ref Chapter 7, FM 100-10.)

a. Bakeries. (Ref par 256, FM 100-10.)

b. Laboratory service.

c. Fumigation and bath. (Ref par 256, FM 100-10.)

d. Laundries. (Ref par 256, FM 100-10.)

e. Sales stores. (Ref par 256, FM 100-10.)

f. Bomb disposal. (Ref par 255, FM 100-10.)

g. Impregnation of clothing. (Ref par 246, FM 100-10.)

h. Decontamination. (Ref par 246, FM 100-10.)

i. Fire fighting. (Ref par 250, FM 100-10.)

j. Construction. (Ref par 247, FM 100-10.)

k. Utilities. (Ref par 250, FM 100-10.)

l. Real estate. (Ref par 248, FM 100-10.)

m. Camouflage. (Ref par 250, FM 100-10.)

n. Technical Intelligence. (Ref par 114, FM 100-10.)

11. MISCELLANEOUS. (Cover supply economy and claims; ref par 145, FM 100-10.)

12. REPORTS. (Cover submission of routine and special reports.)

_____
Commander

Incls:

1. Troop Utilization.
2. Storage and Facility Requirements.
3. Class IV Project Requirements.
4.
5.

* * * * *

DISTRIBUTION: See Distribution list for operations plan.

OFFICIAL:
G4

CLASSIFICATION

FIGURE 2 (continued).

understanding by non-technical service commanders and staff officers who have an active interest in their implementation. Sample of a format and check list referred to in paragraph 3*a* of the SOP is shown in Figure 2.

Detailed Planning

Prior planning should not be limited to the period preceding receipt of the planning directive, but should be practiced throughout the planning operation. Planning is usually broken down into phases, and the G4 must constantly plan ahead for succeeding phases in order to provide necessary guidance to technical service planners and produce continuity of the planning effort.

Detailed planning should be initiated as soon as the following minimum information is available:

1. The mission.
2. Task organization.
3. Enemy capabilities and characteristics of the area of operations.
4. Tactical concept of the operation.
5. Service troops availability list, except in those rare cases where plans are based on *requirements* rather than *availability*.

The G2's contribution to the logistic planning should be considered. Enemy capabilities will have a marked effect on such factors as the location of installations, dispersion, evacuation and hospitalization, transportation, and requirements for defense of facilities and areas. Characteristics of the area of operations which affect logistic planning include:

1. *Weather.*—The effect of weather on requirements for supplies, equipment, shelter, storage, and maintenance.

2. *Terrain.*—*a.* Geographical location to determine accessibility of seaports, airports, railroads, road nets, and means of transportation needed to ship supplies to and within the area.

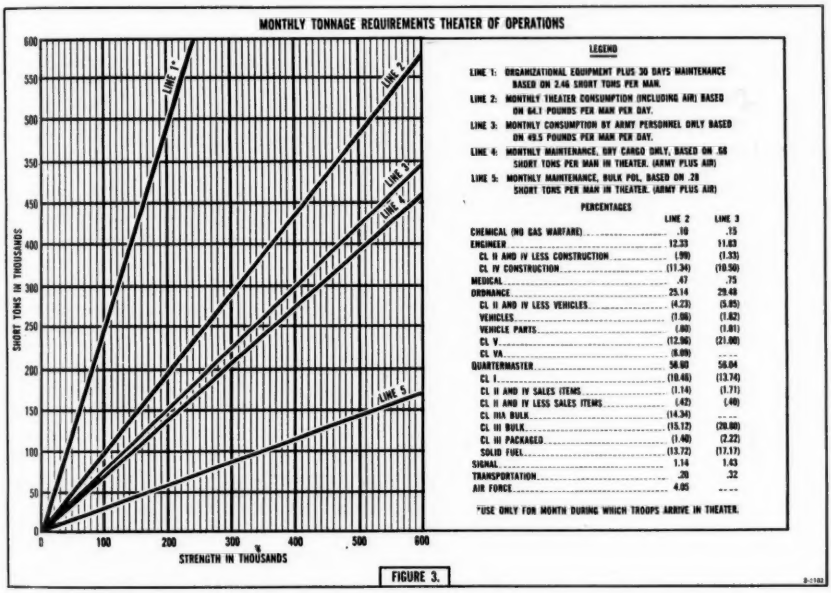

MONTHLY TONNAGE REQUIREMENTS THEATER OF OPERATIONS
SHORT TONS IN THOUSANDS
STRENGTH IN THOUSANDS
LINE 1*
LINE 2
LINE 3
LINE 4
LINE 5
LEGEND
LINE 1: ORGANIZATIONAL EQUIPMENT PLUS 30 DAYS MAINTENANCE BASED ON 2.46 SHORT TONS PER MAN.
LINE 2: MONTHLY THEATER CONSUMPTION (INCLUDING AIR) BASED ON 64.1 POUNDS PER MAN PER DAY.
LINE 3: MONTHLY CONSUMPTION BY ARMY PERSONNEL ONLY BASED ON 49.5 POUNDS PER MAN PER DAY.
LINE 4: MONTHLY MAINTENANCE, DRY CARGO ONLY, BASED ON .68 SHORT TONS PER MAN IN THEATER. (ARMY PLUS AIR)
LINE 5: MONTHLY MAINTENANCE, BULK POL, BASED ON .28 SHORT TONS PER MAN IN THEATER. (ARMY PLUS AIR)
PERCENTAGES
CHEMICAL (NO GAS WARFARE) .10 .15
ENGINEER 12.33 11.83
CL II AND IV LESS CONSTRUCTION (.99) (1.33)
CL IV CONSTRUCTION (11.34) (10.50)
MEDICAL .47 .75
ORDNANCE 25.14 29.48
CL II AND IV LESS VEHICLES (4.23) (5.85)
VEHICLES (1.06) (1.62)
VEHICLE PARTS (.60) (1.81)
CL V (12.36) (21.00)
CL VA (8.09) ----
QUARTERMASTER 56.93 56.04
CL I (10.46) (13.74)
CL II AND IV SALES ITEMS (1.14) (1.71)
CL II AND IV LESS SALES ITEMS (.42) (.49)
CL IIIA BULK (14.34) ----
CL III BULK (15.12) (20.00)
CL III PACKAGED (1.48) (2.22)
SOLID FUEL (13.72) (17.17)
SIGNAL 1.14 1.43
TRANSPORTATION .28 .32
AIR FORCE 4.05 ----
*USE ONLY FOR MONTH DURING WHICH TROOPS ARRIVE IN THEATER.

FIGURE 3.

b. Type of terrain; that is, jungle, mountain, or desert.

c. Topography; that is, relief and drainage systems as they affect the location of installations, vegetation, surface materials as they affect trafficability and hardstandings, and cultural features such as roads, buildings, and bridges.

d. Hydrography in amphibious operations, including coast line data, nature and capacity of beaches, rivers, and harbors.

3. *Other considerations.*—*a.* Political considerations; that is, the nature, peculiarities, effectiveness, and stability of the local government.

b. Economic considerations; that is, standard of living, basic economic structure, availability of commodities for local procurement, manufacturing plants, agricultural considerations, and types and availability of transportation means.

c. Sociological considerations; that is, language, caste system, population data, law and order, propaganda, religion, national customs, and availability of housing.

The planner should constantly look ahead for new methods to simplify and expedite the planning process during the course of detailed planning. This is particularly true of the many laborious mathematical computations which are inherent in logistic plans. Many short cuts and time savers similar to Figures 3 through 8 can be developed to assist the planner. The scale of these aids should be sufficiently large to permit accurate reading.

Figure 3 represents the theater of operations monthly tonnage requirements for:

a. Initial equipment plus 30 days maintenance (line 1).

b. Maintenance requirements only (lines 2 through 5).

This figure is merely a conversion of various tonnage factors from Field Manual 101-10, *Staff Officers' Field Manual: Organization, Technical, and Logistical Data,* dated August 1949, into straight-line graphs. Percentage figures were computed from data contained in par 125, FM 101-10. The determination of monthly tonnage requirements for a theater of operations can be quickly determined by the use of this chart if the theater strength and expected troop arrivals are known or can be accurately forecast. Tonnages by class or technical service can be determined by applying the percentage figures on the right of the chart to the total incoming maintenance tonnage.

First Hypothetical Example

Problem: Theater "A" will have a total army strength of 465,000 on 1 January 19__.

It is expected that 50,000 troops will arrive in the theater during January. Reserves have already been established in the theater for troops arriving through January. The consumption rate is 49.5 pounds per man per day. Organizational equipment plus 30 days maintenance averages 2.46 tons per man. What is the total army tonnage that must be cleared through the ports (assuming sea transport only) of theater "A" during the month of January?

Solution: Read up along 465 line (strength in thousands) to where it intersects line 3, thence along horizontal line to short tons in thousands. Maintenance tonnage for 465,000 troops equals 345,000 tons. Read up along 50 line (strength in thousands) to where it intersects line 1, thence along horizontal line to short tons in thousands. Organizational equipment tonnage plus 30 days maintenance for 50,000 troops arriving in the theater equals 123,000 tons.

Therefore, the total incoming tonnage during January (345,000 tons plus 123,000 tons) would be 468,000 tons.

Figure 4 represents the tonnage requirements by class for army troops less air, in the combat zone. This information is of interest to the army staff as well as the communications zone staff and will assist in rapid calculations pertaining to the

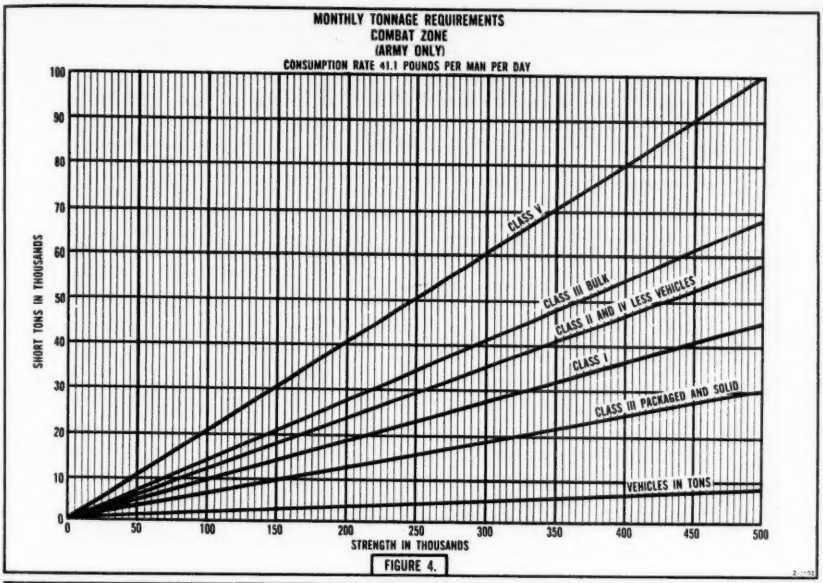


FIGURE 4.

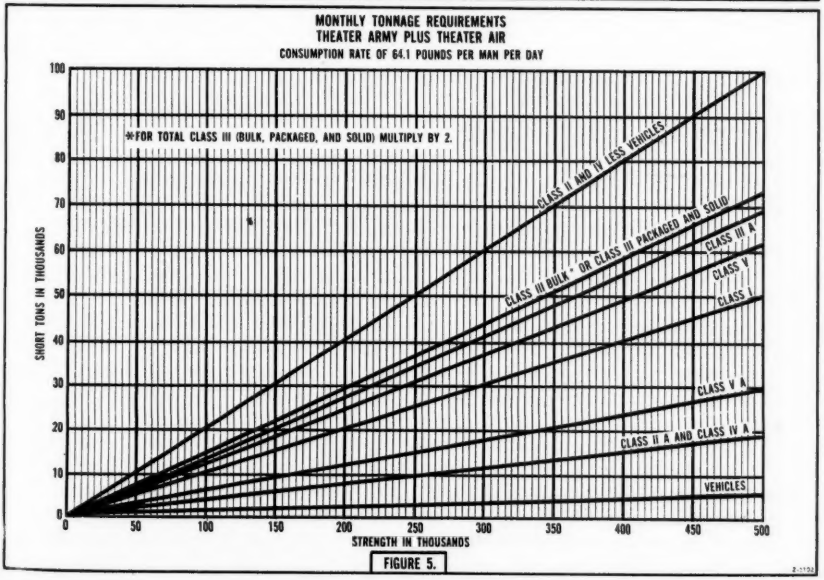

MONTHLY TONNAGE REQUIREMENTS
THEATER ARMY PLUS THEATER AIR
CONSUMPTION RATE OF 64.1 POUNDS PER MAN PER DAY
*FOR TOTAL CLASS III (BULK, PACKAGED, AND SOLID) MULTIPLY BY 2.
SHORT TONS IN THOUSANDS
STRENGTH IN THOUSANDS
CLASS II AND IV LESS VEHICLES
CLASS III BULK * OR CLASS III PACKAGED AND SOLID
CLASS III A
CLASS V
CLASS I
CLASS V A
CLASS II A AND CLASS IV A
VEHICLES

FIGURE 5.

receipt, storage, and issue of supplies in the combat zone. The mechanics of using this chart are the same as for Figure 3.

Figure 5 represents the tonnage requirements in the theater by class, for army troops plus air. This is merely a breakdown of line 2, Figure 3, by class of supply. A similar breakdown can be accomplished for whatever maintenance factor is used. In addition, charts can be prepared for each class of supply by technical service. The mechanics of using this chart are the same as for Figure 3.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	ARRIVAL MONTH	NO OF TROOPS ARRIVING	TOTAL STRENGTH	SUPPLY BUILD-UP PERIOD											
				M+1	M+2	M+3	M+4	M+5	M+6	M+7	M+8	M+9	M+10	M+11	M+12
1	M+1	10,000	10,000	10,000	10,000	10,000	10,000								
2	M+2	15,000	25,000		15,000	15,000	15,000	15,000							
3	M+3	25,000	50,000			25,000	25,000	25,000	25,000						
4	M+4	NONE	50,000												
5	M+5	35,000	85,000					35,000	35,000	35,000	35,000				
6	M+6	40,000	125,000						40,000	40,000	40,000	40,000			
7	M+7	35,000	160,000							35,000	35,000	35,000	35,000		
8	M+8	30,000	190,000								30,000	30,000	30,000	30,000	
9	M+9	25,000	215,000									25,000	25,000	25,000	25,000
10	M+10	20,000	235,000										20,000	20,000	20,000
11	M+11	15,000	250,000											15,000	15,000
12	M+12	10,000	260,000												10,000
13			TOTALS	10,000	25,000	50,000	50,000	75,000	100,000	110,000	140,000	130,000	110,000	90,000	70,000

FIGURE 6.

Figure 6 represents a simple method of tabulating information in connection with the build-up of reserve supplies and equipment. In this case, it is assumed that a 20-day reserve level is to be established within a 3-month period after the month of troop arrivals in the theater. Column 1 is the month of arrival. Column 2 shows the number of troops arriving in the theater each month. Column 3 shows total theater strength including troop arrivals. The succeeding columns represent the supply build-up period by month. The total number of troops arriving is entered in four successive month columns under the supply build-up period, beginning with the month of arrival, since the supply build-up is to be accomplished within a 4-month period (arrival month plus 3 months thereafter). The build-up of reserve supplies and equipment is then computed on the basis of 5 days of supply or one-sixth of the monthly maintenance (20-day level divided by 4 months) for the total number of troops shown on line 13 under each month of the build-up period.

This information, in addition to initial equipment and maintenance (Figure 3), will produce total incoming tonnage figures for a given month.

Second Hypothetical Example

Problem: Theater "B" is being activated on 1 January. Troops will be phased into the theater as shown in column 2, Figure 6. Troops will arrive with full organizational equipment plus 30 days maintenance. Organizational equipment plus 30 days maintenance accompanying troops averages 2.46 tons per man. Maintenance requirements average 64.1 pounds per man per day. A 20-day reserve level of supplies and equipment is to be built up for all troops in the theater within a 3-month period after the month of troop arrivals. What will be the total incoming tonnage during M plus 6 and M plus 7?

Some 60 days of supply are actually brought into the theater for troops arriving during a given month; 30 days accompanying troops and 30 days of maintenance supplies and equipment included in tonnages for the total theater strength. The 30 days of supply accompanying troops is for consumption during the first 30 days after arrival. The 30 days of supply included under total theater strength is for consumption during the following month.

Solution:

	M plus 6	*M plus 7*
Troop arrivals (Lines 6 and 7, column 2)	40,000	35,000
Total strength (Lines 6 and 7, column 3)	125,000	160,000
Organizational equipment plus 30 days maintenance (Troop arrivals applied to line 1, Figure 3)	99,000	86,000
Monthly maintenance tonnage (Total strength applied to line 2, Figure 3)	120,000	153,000
Build-up of reserve supplies and equipment (One-sixth of line 13, columns 9 and 10, applied to line 2, Figure 3)	16,000	17,500
Total incoming tonnage	235,000	256,500

Figure 7 is a conversion of the formula shown in paragraph 227*b*, FM 101-10, to a straight-line graph. The number of truck companies required to move a given daily tonnage forward a known distance can be determined from line 1.

Third Hypothetical Example

Problem: Determine the number of truck companies required to move an average of 6,000 short tons per day over good roads, from base depots to issue depots 140 miles forward.

Solution: Read up the 6,000 ton line to where it intersects line 1. The horizontal line at point of intersection indicates approximately 62.7 truck companies required to move this tonnage forward a distance of 100 miles. Add 40 percent since distance is 40 percent greater than 100 miles. This results in a total requirement of 87 plus truck companies.

This procedure is considerably more rapid than the use of the following formula shown in paragraph 227*b*, FM 101-10:

Line 2 will produce the number of truck companies required to move a given tonnage in one lift, without regard to the distance involved.

$$\frac{\text{(Average daily forward tonnage} \times \text{round trip mileage)}}{\text{(Short tons per truck)} \times \text{(Truck availability per company)} \times \text{(Average daily mileage capability)}} + \text{safety factor}$$

$$\frac{6{,}000 \times 280}{4 \times 40 \times 150} = 70 + 25\% \rightleftharpoons 87+ \text{ truck companies.}$$

Fourth Hypothetical Example

Problem: 5,000 tons of ammunition must be moved to the rear from forward ammunition dumps to prevent its capture by the enemy. How many truck companies will be required to move this ammunition in one lift?

Solution: Read up the 5,000 ton line to where it intersects line 2. The horizontal line at point of intersection indicates 31 plus truck companies are required to move this tonnage in one lift.

Figure 8 represents truck company re-

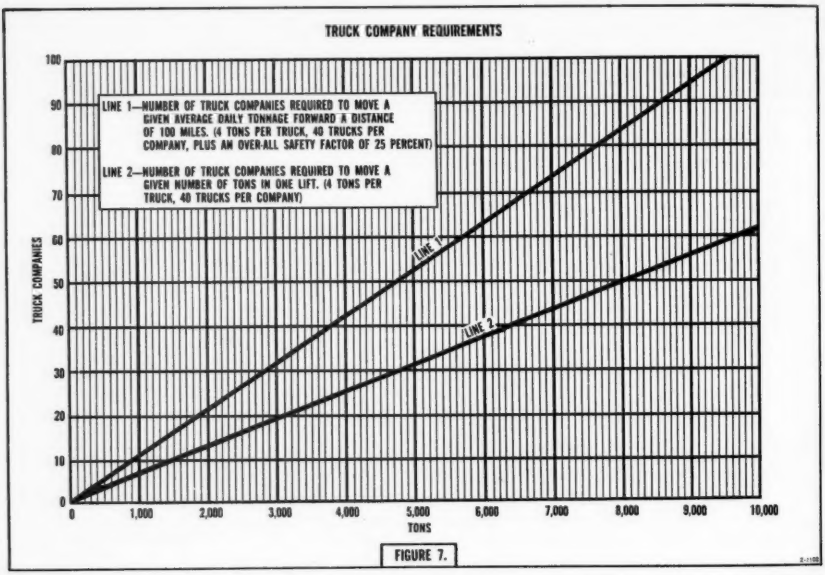


FIGURE 7.

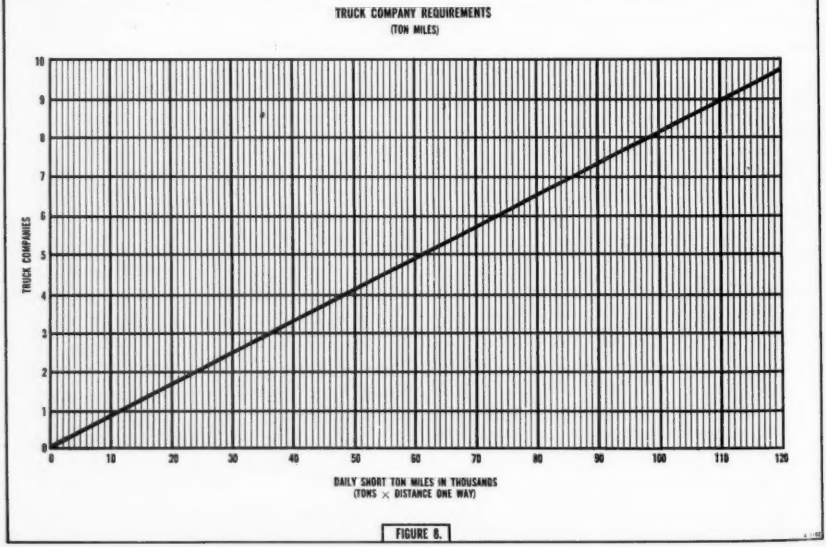


FIGURE 8.

REFERENCE MATERIAL

A basic library of the following publications should satisfy the initial requirements for reference material. Other documents can be added as required.

AR 35-3540	Settlement of Accounts Between Departments and Technical Services.
AR 35-6520	Property Accountability and Responsibility.
AR 35-6560	Receipt, Shipment, and Issue of Property.
AR 35-6720	Blank Forms Pertaining to Property Accounting.
AR 55-155	Transportation of Public Property (Except Animals) and Remains.
AR 380-5	Safeguarding Military Information.
AR 700-15	Oversea Preparation and Shipment of Property.
AR 700-105	Motor Vehicles.
AR 700-240	General, Materials Handling Equipment.
AR 710-25	Levels of Supply.
AR 711-20	Supply Economy.
AR 726-10	Supply Replacement Factors and Consumption Rates, General Policies.
AR 730-5-1	Distribution.
AR 735-150	Accounting for Lost, Damaged, and Destroyed Property.
AR 750-5	Maintenance of Supplies and Equipment—Maintenance Responsibilities and Shop Operation.
AR 750-11	Maintenance of Supplies and Equipment—Responsibilities of the Departments of the Army and the Air Force.
AR 850-5	Marking of Clothing, Equipment, Vehicles, and Property.
AR 850-7	Marking of Vehicles Used on Landing Areas.
FM 5-20	Camouflage of Bivouacs, Command Posts, Supply Points, and Medical Installations.
FM 5-35	Engineer Reference Data.
FM 8-10	Medical Service of Field Units.
FM 8-25	Medical Services in Joint Oversea Operations.
FM 9-5	Ordnance Service in the Field.
FM 9-6	Ammunition Supply.
FM 9-10	Ordnance Field Maintenance.
FM 10-10	Quartermaster Service in Theater of Operations.
FM 10-22	Quartermaster Clothing and General Supplies Depot Company.
FM 11-20	Signal—Organization and Operations in the Corps, Army, Theater of Operations, and GHQ.
FM 11-22	Signal Operations in the Corps and Army.
FM 17-50	Logistics, Armored Division.
FM 21-10	Military Sanitation.
FM 21-15	Individual Clothing and Equipment.
FM 21-26	Advanced Map and Aerial Photograph Reading.
FM 24-5	Signal Communications.
FM 27-5	United States Army and Navy Manual of Civil Affairs Military Government.
FM 30-5	Combat Intelligence.
FM 30-15	Examination of Enemy Personnel, Repatriates, Civilians, Documents, and Matériel.
FM 30-20	Military Intelligence—Military Maps.
FM 30-22	Military Intelligence—Foreign Conventional Signs and Symbols.
FM 31-25	Desert Operations.
FM 31-40	Supply by Air in Combat Operations.
FM 55-6	Military Transportation Service in Theaters of Operation.
FM 55-25	Ports (Oversea) Headquarters and Headquarters Companies.
FM 57-30	Airborne Operations.
FM 70-10	Mountain Operations.
FM 70-15	Operations in Snow and Extreme Cold.
FM 72-20	Jungle Warfare.
FM 100-5	Field Service Regulations—Operations.
FM 100-10	Field Service Regulations—Administration.
FM 100-15	Field Service Regulations—Larger Units.
FM 101-5	Staff Organization and Procedure.
FM 101-10	Organization, Technical, and Logistical Data.
FM 101-51	Department of the Army Planning System.
SR 310-20-3	Military Publications.
SR 310-20-4	Military Publications.
SR 310-20-5	Military Publications.
SR 320-5-1	Dictionary of United States Army Terms.
QMC 17-11	Quartermaster Operational Planning Check List.

The following additional texts, reports, and reference data will be found very useful. Staff college texts may not be available through normal distribution channels. However, each planning staff will usually have members who are graduates of these schools and who may have personal copies.

ST 101-10-1	Tables of Organization and Equipment, Command and General Staff College.
ST 600-150-1	The Logistical Command, Command and General Staff College.

Staff Officers Manual for Joint Operations, Armed Forces Staff College.

Manual—Joint Overseas Operations, Armed Forces Staff College.

Manual—Mounting an Operation, Armed Forces Staff College.

Manual—Organization, Combat Characteristics, and Techniques of the Armed Forces, Armed Forces Staff College.

Manual—Base Development, Armed Forces Staff College.

Supply Bulletins.

Technical Manuals.

Technical Bulletins.

Intelligence Studies of the Proposed Area of Operations.

After Action Reports of World War II Operations and Campaigns.

quirements based on a capability of 12,000 ton miles per truck company per day. This graph will assist in determining truck company requirements for individual hauling operations when it is not essential that all cargo be moved in one lift. This graph does not include the 25 percent safety factor incorporated in line 1 of Figure 7.

Fifth Hypothetical Example

Problem: 1,000 tons of ammunition are to be moved from army depots to army supply points 35 miles forward. This ammunition is desired in the supply points within approximately 24 hours to meet anticipated expenditures during a current operation. How many truck companies will be required to complete this shipment within the time specified?

Solution: 1,000 tons times 35 miles equals 35,000 ton miles. Read up along 35 line (daily short tons in thousands) to where it intersects the diagonal line. The horizontal line at point of intersection indicates approximately 2.9 truck companies. It can be readily seen that more than one round trip per truck will be required to complete this shipment. If the move is to be accomplished in one lift, then the number of truck companies should be determined from line 2, Figure 7.

Conclusion

These methods and examples represent only a few of the possible aids to logistic planning. Many others can be developed. The term "attack vigorously in all directions" is frequently used in a facetious manner when a definite course of action is unknown. Yet many planning operations, particularly during the early stages, exemplify this course of action rather than the direction of the planning effort along predetermined lines toward a common goal.

With proper prior planning, co-ordination, and supervision, a planning staff can accomplish its planning mission with minimum effort, confusion, or repetition. Any device which will save time and manpower is as important to the planner as it is to the commander who seeks to gain his objective as quickly as possible at the minimum cost.

A perusal of available military and civilian publications, during the past 3 months, indicates that material from the MILITARY REVIEW was reprinted in the following countries:

Australia	**Ecuador**	**Mexico**	**Spain**
Belgium	**Great Britain**	**Norway**	**Switzerland**
Brazil	**India**	**Pakistan**	**The Netherlands**
Canada	**Ireland**	**Paraguay**	**United States**
Denmark	**Italy**	**Portugal**	**Uruguay**

The Editor

Don't Get Caught With Your Bridges Down

Lieutenant Colonel H. F. Cameron, Jr., *Corps of Engineers*
Instructor, Command and General Staff College

A MOMENTARY flash illuminated the darkening sky and the roar of a blast reverberated across the flooded fields surrounding Antwerp. Then silence came, broken only by falling debris and the screaming of the wounded. It was 5 April 1585, and for eight tedious months Alexander, Duke of Parma, had been working night and day to bridge the Schelde River. Stunned by the blast, Alexander staggered to his feet and rushed out on his bridge. The sight that met his eyes was one which every commander involved in a river crossing anticipates and dreads. A gap of dark, cold water swirled where his pontons had floated only minutes before. Approximately 1,000 of his 9,000 men lay dead or mangled. His remaining troops were divided by a 2,400-foot river and were panic-stricken by the destructive attack on the bridge. The final outcome of his aggressive campaign for the city of Antwerp was keyed to that broken and useless bridge. Similar situations have occurred untold times in the past, and serve to emphasize the dependence of a commander on the integrity of his tactical bridging. The fear of defeat in detail, of forces divided by a destroyed bridge, must prey on the mind of every commander who prepares for a river crossing operation.

Bridge Defense Techniques Stagnated

As the capacity for the destruction of tactical bridges increased with the means available in modern warfare, we find that the techniques to combat them had stagnated, or were hidden away in the musty files of the War Department. Buford Rowland, in an article entitled "Revolution in Nets" (MILITARY AFFAIRS, Fall 1947 issue) stated: "In 1939, when Hitler launched his European assault, there was no American experience with modern nets which could be drawn upon as a basis for design." Though he was speaking specifically of naval antisubmarine measures, the implication holds for our lack of preparedness in specialized defensive techniques for the protection of bridges. In the effort to turn out a trained army, necessary to carry the war to a successful conclusion, details, of necessity, suffered. The records of past armies and former campaigns were permitted to mold away unread in our archives, and, as each new situation presented itself to the expanding army, it was tackled as though it were

Many commanders have mastered the techniques of river crossings and bridging a river obstacle. Too few have learned how to plan and maintain the integrity of floating bridges against waterborne attacks

new, not only to them, but to the art of war. Out of this welter and confusion, the old old problem of protecting bridges suddenly emerged as the allied armies drove across the Channel toward the heart of Germany and the Rhine River appeared on the military horizon.

Do not consider this article as "just another river crossing." No attempt will be made to cover the general planning necessary to conduct river-line operations, so ably accomplished by Lieutenant Colonel F. E. Stevenson in the March 1951 issue of the MILITARY REVIEW ("Third Army's Planning for the Crossing of the Rhine River"). This article will be confined, rather, to recording the First Army's preparations to *protect* the Rhine River bridges from *waterborne destruction*. This narrow focusing upon a small phase of river-line operations, so successfully carried out, is not intended to turn the spotlight from the over-all picture. It is done to show instead the minute details of planning carried out by the staff of an army which was engaged in fighting its way forward at an average of more than 2 miles a day. Further, it emphasizes the thoroughness of a staff's use of intelligence and shows how planning, accomplished well in the past, was so complete that it stands out as one of the best examples of that much used word, *flexibility*. Every detail of the operation was integrated and worked into an army plan in such a manner as to develop the precision of a well-designed machine. Recounting the work accomplished may bring to the light of present-day perusal and study the gist of a series of reports already following the path of so many previous reports into "filed oblivion." Certain thoughts and concepts, again brought out for consideration, may furnish the background for the planning of some future, comparable operation and may reduce, in some measure, the detailed experimental labor necessary to implement those plans.

Army's Initial Planning Started

In paragraph 783*c* of Field Manual 100-5, *Field Service Regulations, Operations*, dated August 1949, one now finds the statement, "Immediately after bridges are constructed, protective devices including nets and booms may be placed in the stream to protect them from waterborne demolition activities." (This is the accolade of military approval to the operation being recounted, since the edition of the same manual, in effect in 1944, failed to consider, as important enough to merit mention, the defense of bridges against waterborne dangers.) As a base for the development of a plan for the defense of a floating bridge, the quoted paragraph is quite brief. It was, however, derived from the First Army's plan for the protection of their projected bridges, and forms a firm foundation for the promulgation of such a defensive system.

In the summer of 1944, the First Army started detailed planning for the Rhine River operations. (In the report, "Employment and Staff Procedures of Engineers with Divisions, Corps, and Army," Colonel Carter, First Army Engineer, stated that it was standing operating procedure for the First Army Engineer Section to prepare estimates of the areas of operations at least 130 days in advance so as to implement planning.) Volumes of detailed information had been collected and disseminated by various headquarters on the technical and tactical aspects of the Rhine River. The 12th Army Group Intelligence Studies indicated that, though the river was zoned (international pacts of river users) for 4,000-ton barges, the 1,000-ton limitation on the interriver waterways would limit the majority of the boats and barges encountered to that size; that the velocity of the stream would, in all probability, vary from 4 to 8 feet a second (2.7 to 5.5 miles an hour) at the times of the planned crossings, though recorded flood stages had reached a velocity

Above, the last log of a boom across the Rhine River being worked into place by members of the 164th Engineer Combat Battalion. Below left, an engineer firing at a floating object in the Rhine River which was drifting toward allied ponton bridges. Below right, part of the equipment used to prevent sabotage to the ponton bridges on the Rhine River.

of 16 feet a second; that the average width, for planning purposes, would be 800 feet within the zone of the First Army's operations; and that the bottom throughout most of the river was gravelly. Included with this information were several small items bearing on the German's specialized training for waterborne attacks. These tended to emphasize the German ability for launching a strong offensive (waterborne) against the floating bridges in a river-line operation. This capability when viewed in proper perspective with the size and fast current of the Rhine River, the strong national significance this river holds for the German people, and the fanaticism of the Nazis strongly indicated that determined attacks of this type would be made against any effort to cross the river. This interpretation of the assembled intelligence required that the First Army intensify this phase of its planning and prepare adequate river defenses to cope with it.

In early planning it is necessary that a concept of the operation be issued upon which to base detailed plans. In this respect, the First Army was not remiss. The concept issued to the special staff sections was ambitious, but it was one that would require the most thorough implementation. The concept was that the First Army would cross the Rhine River alone, unassisted by the efforts of flanking armies. Given to the Engineer Section of the army headquarters in July 1944, it was directed to formulate a supporting Engineer Plan. A review of the current operations by the Engineer Section indicated that the load of special planning for this operation could best be carried on by the army and corps engineer units. Each army engineer group, therefore, was assigned a particular planning mission to complete the details for and in consonance with paragraph 766*a* of Field Manual 100-5, and directed to make studies of adequate protective measures for the bridges.

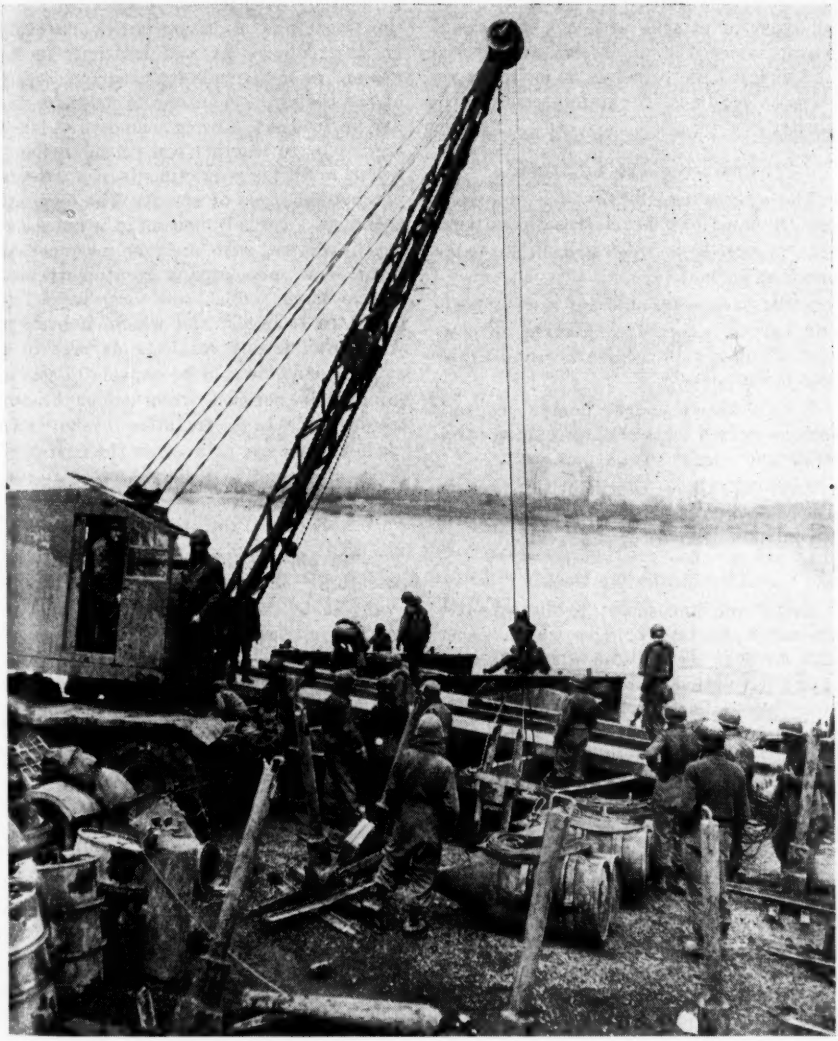
The 1110th Engineer Combat Group was assigned the construction planning mission concerned with the construction and protection of two tactical bridges. On 20 September, the group submitted a plan of its proposed operation to army. This was approved and included in the army Engineer Plan. The approved plan was then issued, as a directive, to the battalions forming the group for the preparation of the supporting details necessary for the completion of their individual missions. "*164th Engr C Bn: construct and install boom and/or net for protection against floating mines and/or explosive boats.*" This extract from the group directive started in motion the train of events that were culminated at the Remagen bridgehead.

Enemy Threats Analyzed

The battalion, visualizing more than the bare directive, realized the implications in the task assigned it and went into a detailed study of the problems posed. The latest intelligence reports were read and digested and a thorough estimate of the problem was prepared. Protecting the bridges against waterborne destruction involved far more than the brief instruction indicated. The potential of the enemy was such that it was known that he had the means for launching the following attacks:

1. Floating mines and guided torpedoes.
2. Boats and barges, both drifting and powered.
3. Swimming saboteurs.
4. Midget submarines.
5. Fire attacks by fire boats or burning oil slicks.

To prepare fully to defend against such attacks required a detailed study of the characteristics of each type of attack, the methods that would be used for launching such an attack, and the effect the attack, if successful, would have on tactical bridges. Then, and only then, would it be possible to prepare equipment and plans



Personnel from the First Army's 164th Engineer Combat Battalion loading antimine equipment aboard launching rafts before towing it out into the Rhine River to stop German floating mines from destroying allied bridges across the river. Note the anchors which were made from assault-gun blanks, and the noses which were added to the 55-gallon drums to improve their hydraulic qualities.—Department of Defense photo.

to control the attacks. An attempt to stop all types of attacks with a single means was considered to be highly impractical and violated the principle of having a reserve in readiness for unforeseen eventualities.

Characteristics of Attack

The enemy capabilities fell naturally into three major characteristics of attack:

1. The "free floating" demolition, using mines of various types.

2. "Mass-velocity objects," such as boats and barges, either free floating or powered. (This would include fire and explosive laden boats.)

3. Explosives under human control, such as guided torpedoes, swimming saboteurs, and midget submarines.

Each of these characteristic groups seemed to lend itself to a different method of control.

First Protective Device

Mines and torpedoes, to be effective against a floating bridge, would either have to float on or near the surface or have a detonating device reaching the surface. Midget submarines would require periscopic observation at the water surface. Mines, unless extremely large, would have to be used in mass to produce more than minor damage to a floating bridge. A mass mine attack might only be the prelude to an attack by other means, so the equipment used for the control of such an attack should be the first in a series of defenses. The control of this type of attack could best be handled by the detonation of the mines or torpedoes prior to their reaching the bridge site. Their detonation could be caused by direct fire, or by a boom of a type whose depth would be the same as the floats or pontons of the bridge. A boom, if used, should be capable of absorbing the multiple explosions of a mass attack without incurring breaks. (The use of deep floating mines with time-detonating devices was discounted since the velocity of a stream varies markedly at different depths and locations in its channel as to preclude the accurate setting of the timing mechanisms to detonate under the bridge.) A boom composed of large logs fastened together was considered sufficient to fill the requirements of a defense against this type of attack. The logs, attached to a cable by means of a quick assembly device, with anchors interspersed throughout, presented a continuous protective screen which was easy to install and hard to break, and which, if broken, would confine any resulting damage to a small area. It would be capable of maintaining its position while minor breaks were repaired. A tentative design was made and its use planned as the first of a series of protective devices.

Second Protective Device

Boats and barges were considered as potentially the most dangerous means available to the enemy for damaging or destroying the bridges. The impact potential energy in a fast-moving barge is tremendous. The time required to sink a boat of any size by shell fire would, of course, vary greatly with its construction (compartmentation). However, at best, sufficient time would be required that the boat, unless stopped or impeded, would reach the bridge and either destroy or damage it. To stop or slow down a barge or boat moving with its expected velocities presented a problem. To bring a 1,000-ton barge moving at 8 feet a second to a quick stop was considered physically impossible. The anchorage requirements for stopping a ship of this size traveling at this velocity in various distances is shown in Figure 1. It would be necessary, however, to slow the boat down or gradually stop it for a sufficient period of time to ensure that it could be sunk by artillery fire. A set of cables, each having sufficient strength to handle the anchorage stresses, floated in

such a position as to engage the barge or boat. A series of anchors, adding a steadily increasing resistance to the forward movement of the barge, would slow it down sufficiently to assure its destruction prior to hitting the bridge. A boom embodying these requirements was designed as the second in the series of protective devices.

ANCHORAGE REQUIREMENTS
(1,000-Ton ship)

Velocity of ship (in feet per second)	*Stopping distance* (in feet)	*Anchor pull* (in pounds)
8	1	2,230,000
8	10	223,000
8	50	44,600
8	100	22,300
8	300	7,400

Computed from Knight's *Modern Seamanship.*

FIGURE 1.

It was felt that swimming saboteurs and guided torpedoes could be stopped in two ways. One would be by depth charging which would be effective also against midget submarines. It is known that shock waves are transmitted sharply through water. Explosions of sufficient size, detonated with a frequency that would not give a swimmer time to pass through the "deterrent zone" between explosions, would be highly effective. (Statistics supporting this decision are shown in Figure 2.)

Third Protective Device

The second method of controlling the attack assumed that the swimmer or operator of a guided torpedo would surface in the vicinity of the bridge, to preclude overshooting the target. The final attack on the bridge would be made from such a point. Since such an attack undoubtedly would be made at night, a barrier at a distance considered to be the maximum for night observation of the bridge would be effective. Such a barrier should extend the full depth of the stream to be entirely effective. This was deemed impractical because of the need for information of the stream cross section and the weight of such a barrier. (The need for alterations or construction after "profiling" the river bed would slow up the completion of the installations and prohibit the mass production of equipment prior to reaching the river.) A barrier reaching to a depth of 10 feet, located approximately where an attacker would surface to make his final attack, would so impede and confuse the attacker that he could be discovered and dealt with by local security forces. The barrier to be practical and effective had to be of materials strong enough to preclude their being cut with hand tools yet light enough to be handled and installed easily. (Navy mine nets were considered, but their weight and type of construction placed them beyond the means of easy installation. It was felt also that the demand for naval use would prohibit their being available.) A net embodying the prerequisite features was designed for the third protective contrivance.

Burning Oil Slicks

The possibility of attack by burning oil slicks was discarded when a study of the speed of the Rhine current indicated that extremely large quantities of inflammable material would have to be launched from a site in close proximity to the bridge if the attack were to be successful. With the possession of unobstructed observation of the river banks in the bridgehead, a suit-

able close-in site for launching such an attack would not be available to the enemy. The floating of containers of inflammable material downstream with time-detonating igniters would not permit the concentrations necessary for a successful attack. The accuracy of this deduction was borne out later when an army intelligence memorandum of 13 March 1945 gave the figures on the requirements for such a fire attack (shown in Figure 3), and discounted the German ability to launch an effective burning-slick attack.

EFFECT OF DEPTH CHARGES

Weight of charge (in pounds)	*Safe distance* (in yards)	*Deterrent distance* (in yards)	*Lethal range* (in feet)
1¼	940	400	6-8
5	1,200	500	10-12
300	6,000	2,000	60

British Admiralty Data, 11 December 1944.

FIGURE 2.

The conclusions finally reached, were that three separate contrivances, integrated into a "protective zone," would offer adequate protection; that, like other obstacles, the devices would be effective only if defended (covered with fire and properly maintained); and that illumination and artillery support would be needed in addition to the security provided by engineer units. The "protective zone" would include a *detonating boom* for mines, a *ship impact boom* for loose shipping, and an *antiswimmer net*. The details of this concept were worked out and tentative designs for the construction of the three types of installations were submitted to the First Army through the group on 24 September 1944. The army Engineer Section approved the plan and ordered the battalion to construct pilot models and experiment with them, to improve the design, to evolve a technique for their installation, and to ascertain the support requirements. The order from the army included the recommendation that several substitute materials be tested to determine if their use would be practical. The requirements that all material be capable of local procurement in the quantities required and that all designed devices be capable of erection with engineer organizational equipment were included and stressed. This former requirement was added when it became evident that the time lag for the procurement of special supplies, through army supply channels, would be so great that there was little hope of obtaining this type of equipment in time for the operation.

Experiments Started

On 4 October 1944, Company "B," 164th Engineer Combat Battalion, was withdrawn from its supporting role in the vicinity of Aachen and ordered to set up an experimental area on the Meuse River near Liége. It proceeded to manufacture test sections of the nets and booms; test anchors and anchorage schemes; devise an erection technique; and compile data on the action of various devices under actual stream conditions.

Major Problems

The main problems faced at this time were:

1. The development of adequate flotation for the nets and booms.
2. The design and testing of adequate anchorage (computation of the net drag).
3. The simplification of all designs to ensure that local manufacture and easy installation would be possible.

The support of nets and booms at a proper position in relation to the surface

of the water had two apparent solutions: the use of a large quantity of German airplane "belly" tanks captured in Aachen, or the use of 55-gallon oil drums which were available in sufficient quantities through normal supply channels. The "belly" tanks had good hydraulic qualities but, because of their thin-skinned construction, were badly battered and developed leaks within 24 hours in the Meuse with only a normal amount of stream debris hitting them. Their displacement was not great, and they would have to have been used in a ratio of 3:1 as compared with the 55-gallon drums. The 55-gallon drums, though having greater flotation, showed a tendency to turn end-over-end in the stream, which caused large anchorage stresses. The addition of conical noses to the 55-gallon drums increased their stability and flotation with a subsequent reduction in the anchorage stresses. This improvement was sufficient to warrant their selection instead of "belly" tanks.

Adequate anchorage required considerable experimentation. Theoretical calculations, using the weight and design of the anchor in relation to the earth shear of the flukes, produced rather high figures, however, tests in the muddy bottom of the Meuse seemed to substantiate them. (These were shown to be in error later, particularly in a stream bed where velocities were such as to induce scouring action.) The heaviest anchors in the bridging companies—300 pounds—were inadequate for the operation unless used in large quantities. An apparent solution seemed to be the use of assault-gun barrel blanks, found in a small German factory, weighing about 500 pounds apiece. Eye-rings and flukes were welded to the blanks and, when tested, they seemed to be quite secure.

The stipulation that the construction of the devices be accomplished with the organic equipment of the engineer combat battalion required alterations in the design of the nets and booms. Finally, a sectional construction affording easy installation and transportation, and permitting rapid repairs in case of damage, was developed. The sectional construction, with each section capable of independent action, also had the facility of localizing damage to small sections which was of extreme importance on a river the width of the Rhine. The fear of losing a complete net or boom because of rather minor damage had worried the designers throughout their studies.

By the end of October, the unit had tried out several designs and tested the materials recommended by the army. On 4 November 1944, a consolidated report was submitted to the First Army Engineer Section detailing the types of materials experimented with, the results of the experimentation, and listing recommendations for the construction of each of the proposed nets and booms.

On 31 October, the 12th Army Group disseminated an account of the German

BURNING OIL SLICKS

Quantity of oil required	*Coverage* *Length*	*Width*	*Depth*	*Burning time* (in minutes)
425 Tons	1 mile	100 yards	¼ inch	4
850 Tons	1 mile	100 yards	½ inch	7
1,000 Barrels	100 yards	200 yards	¼ inch	4

First Army Engineer Intelligence Memorandum, 13 March 1945.

FIGURE 3.

attacks on the Nijmegan Bridge in the British zone and the failure of the improvised British defenses. The proposed designs, as submitted to the army, were carefully reviewed in the light of this failure and were considered satisfactory because the weaknesses of the British defense plan apparently were overcome. The recommended sectional construction would permit the relief of pressure caused by debris, in that sections could be opened and cleared of accumulated material. In addition, ensurance against the failure of a complete net was provided. The diagonal installation of the detonating boom would, in addition to detonating mines, force a large portion of the floating debris to the river bank where it could be easily removed.

On 7 November 1944, First Army Engineer Job Order No. 68 was issued to the 164th Engineers. This contained completed plans for the defense equipment revised in the light of the latest intelligence reports and the experience gained by the battalion. The battalion was ordered to construct, by 14 November, a set of nets and booms in accordance with the plans, and to be prepared to demonstrate the equipment and the erection technique to a group of army officers. The antiswimmer net, the impact boom, and the detonating boom were demonstrated on 18 November 1944 to representatives of the First Army Engineer Section and commanders of army and corps engineer groups.

Nets and Booms Constructed

The effectiveness of the equipment and the technique for its erection were approved by this group of senior officers and, on 21 November 1944, First Army Engineer Job Order No. 78 was issued ordering the 164th Engineers to construct sufficient equipment to provide for the erection of six antiswimmer nets (4,800 feet); three ship impact booms (2,400 feet); and three mine detonating booms (2,400 feet).

The First Army Engineer Technical Bulletin No. 9, *Booms for Bridge Defenses on Wide Rivers With Swift Currents*, was issued on 5 December 1944 and distributed to engineer units in the army and to adjacent armies. It contained the plans for the construction of the nets and booms, detailed the technique for their erection, and contained an outline for the incorporation of the three devices into a bridge defense plan.

The Battle of the Bulge hampered the completion of Job Order No. 78 as the battalion was moved to the vicinity of Ciney for the defense of the Meuse and was unable, for more than a month, to work on the project. On 31 January 1945, a completion report was submitted to the First Army for this project. The size of the job can be appreciated when one looks at the bill of materials submitted with the completion report. (See Figure 4.)

During the period that the battalion was constructing the nets and booms, the First Army Engineer Section continually reviewed the proposed defense plans as new intelligence became available. The plan, with its "protective zone," was presented to the general staff and integrated into the over-all army plans for this operation. With this integration, an allocation of supporting troops to support the plan was prepared.

The Nets Are Tested

The results of the actual Rhine River operations show that this planning was justified and illustrate how the carefully prepared plans for a deliberate river crossing can be used for a hasty crossing when supported by good staff action.

At 1630 on 7 March 1945, the 9th Armored Division seized the Remagen Bridge intact! The First Army was crossing the Rhine alone and unassisted by flanking armies!

The speed and precision with which the prepared plans were put into operation

and the minute details which were handled smoothly by an efficiently operating staff can best be told by extracts from journals, diaries, and after action reports of the various units involved.

By 1800 on 7 March, the 164th Engineers, then in Kalterherberg, Germany (approximately 60 miles away), received the following army order:

"164th Engr C Bn atchd III Corps effective 072400A Mar 45 for construction of mine booms across the Rhine. Atchd: 3812th QM Trk Co, 3710th QM Trk Co." Accompanying the order was First Army's Engineer Job Order No. 111, "Put in Nets, priority AAA+1."

The Army Engineer Section telephone journal recorded the following conversation: "071845 Mar 1110th Engr C Gp called for release of all mine boom equipment at E-7 (Montzen). Depot called immediately."

The III Corps After Action Reports contain the following entries in the Engineer Section journal:

"07 Mar special bn assigned by army for booms and net construction."

"08 Mar 738th Tk Bn CDL (armored canal defense lights) atchd."

"08 Mar 2d Plat Btry "C" 226th AA S/L (searchlight) Bn atchd."

"08 Mar 14th Cav Gp to co-ordinate bridge protection."

"09 Mar Corps Engineer ordered to assume cmd all engr activity vic of the bridge. Will set up fwd CP Engr Sect in Remagen."

At this time, a detachment of LCVP Unit No. 1 (Navy) and a detachment of the 329th Harbor Craft Co (seamules) were added to the 164th Engineers.

The following extracts from the diary of the III Corps Engineer Forward Command Post are of interest:

"091400 net construction started above Remagen Bridge."

BILL OF MATERIALS

for the

Construction of Nets and Booms for the Rhine River Crossing

Quantity	*Item*
119,000 feet	¼-inch cable (net)
69,148 feet	1-inch cable (impact boom)
320 feet	1-inch × 3-inch channel iron
2,250 feet	2-inch × ¼-inch strap iron
33,100 feet	½-inch cable (anchor lines)
7,250 feet	¾-inch rope
2,190	½-inch cable clamps
28,314	¼-inch 4-way cable clamps (specially designed and manufactured for this project)
1,879	1-inch cable clamps (standard design)
460	55-gallon drums

After Action Report, 164th Engineer Combat Battalion.

FIGURE 4.

"130900 two scows intercepted by 164th."

"13 Mar advised of imminent danger of swimming atk. Told V Corps."

"141910 164th dropping 50 lb. charges every 5 minutes."

Engineer Intelligence Memorandum No. 8 (First Army), 24 March 1945, contained a report of the German attack on the bridge. "Four swimmers captured night 17-18 March by patrol from the 14th Cavalry Group and 164th Engineers. One died of wounds. One swimmer captured night of 19-20 March by 94th Signal Battalion."

At the time of the attack on the bridge, the "defensive zone" was very much as originally planned and is shown diagrammatically in Figure 5.

Riflemen stationed at the mine booms fired at all floating objects. (The only mine seen during the operation was detonated in this manner.) A patrol in an LCVP operated above the booms during the hours of darkness, and dropped depth charges, inspected suspicious objects floating in the river, and removed large pieces of debris. An area almost a half a mile long upstream of the booms was illuminated by CDLs which gave a diffused lighting. The 14th Cavalry Group had assault guns emplaced to cover the upper reaches of the illuminated area, and corps had emplaced two 155-mm guns to cover the lower section of the illuminated area and the ship impact boom. The 164th Engineers established an observation post beyond the range of illumination and reported all suspicious objects seen in the river by phone. Backing up the CDLs were two 60-inch searchlights in readiness to spotlight a large barge or a mass swimming attack. Combined patrols of cavalrymen and engineers covered the near bank regularly.

The captured swimmers were proof of the effectiveness of the organization. At 2345 on the night of 17 March, the observation post of the 164th Engineers reported to the Defense Command Post suspicious objects coming down the river. All units and stations were alerted immediately, the frequency of depth charging was increased, and a patrol of cavalrymen and engineers started up the river bank on the alert. A few minutes later, this patrol captured four swimmers as they were driven from the water by the depth charges. One of them was badly wounded and died shortly after he was captured. Another swimmer was captured 2 nights later by the 94th Signal Battalion and a sixth man was accounted for when his bullet-riddled body was found 2 weeks later wrapped around the anchor chain of a barge above the bridge. It was presumed that one swimmer left the water on the far bank or swam submerged completely through the area of the bridge as later interrogation established the fact that seven men had entered the water to make the attack.

Defenses Analyzed

An interrogation of the swimmers brought out many points to consider in a river defense plan. The strong points of the First Army's Engineer Plan as determined by this interrogation were:

1. *CDL illumination.*—The swimmers had anticipated that there would be nets installed above the bridge and expected them to be illuminated by searchlights which would necessarily cover a narrow zone. They considered that it would be possible to evade detection in this narrowly illuminated area by diving under the water. An area so large, one so evenly illuminated, as that covered by the CDLs was most disconcerting and they did not know how to bypass it since too long a dive might cause them to overshoot the bridge and swimming back against the Rhine current with the heavy charges they were towing would be very difficult and time consuming.

2. *The intensity of small-arms fire.*—Their plans also had included the anticipation of security measures close in to the

bridge, but from past experience with American units they considered it would not be alert. To be subjected to intense, direct, small-arms fire for an area almost a mile long had surprised and bothered them.

3. *Depth charging.*—This was probably the main cause of their having to abandon their mission and leave the water. They reported that they felt the first concussions long before they reached the illuminated area but could not determine what caused them. As they got closer to the "defensive zone" where the depth charges were being dropped, the shocks became so sharp they finally had to abandon their mission and leave the water. They were towing plastic charges supported by improvised floats. The charges contained delayed-action fuzes that were set before entering the water to go off prior to daylight. The wounded man was hurt by the explosion of the charge that he was towing. Whether the charge was hit by rifle fire or had a defective igniter is not known, but the efficiency of this direct fire is substantiated by the swimmer who was killed and also by the fact that rifle fire caused two other charges to submerge and become such a burden to the swimmers that they had to drop them.

The initial attack, as planned by the swimmers, was to have been one against the abutments of the Remagen Railroad Bridge itself. It was to have been made with guided torpedoes designed to drop the bridge. The road conditions approaching the Rhine were so bad that the delivery of the torpedoes to the river was delayed until after they received the report that the railroad bridge had collapsed on 17 March. Their plan was quickly changed to that of blowing out the anchor cables of the floating bridges and letting the current destroy the bridges. (Unauthenticated reports were received that the 99th Infantry Division captured a guided torpedo intact on its special trailer.)

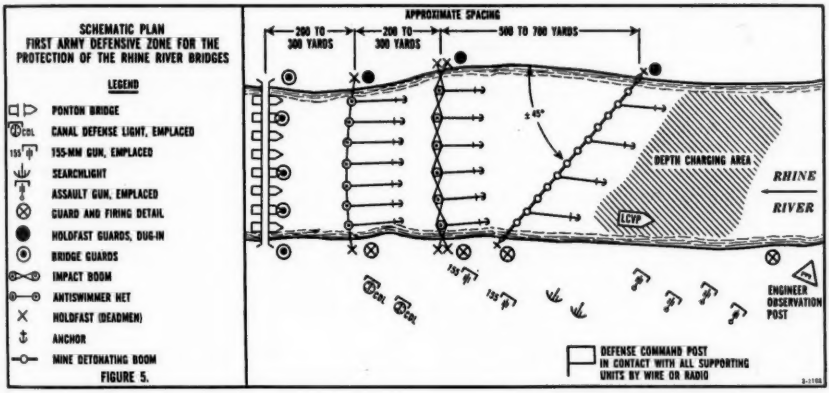


FIGURE 5.

Conclusion

This one small phase of the European operations may seem rather narrow in its concept, but it illustrates important principles:

1. *Timely intelligence enables effective countermeasures to be prepared against new and relatively untried techniques.* Our realization that the information on the German training of *Kampfschwimmers* gave them an avenue of approach (which presumably we were not adequately prepared to defend), in such time as to pre-

pare effective countermeasures, shows careful analysis and the early determination of enemy capabilities.

2. *Efficient long-range planning enables the instant exploitation of any success.* Protective measures, prepared well in advance of the proposed operation for a deliberate river crossing, were available immediately when unusual opportunities for exploitation presented themselves to the command.

3. *Good staff action is complete.* There is no doubt that the plans for the preparation of the Rhine River bridges against waterborne attacks were complete and detailed. The rapidity with which a plan for a deliberate crossing was modified and put into effect when news of the capture of the Remagen Bridge flashed through the First Army is sufficient evidence of their all-inclusive nature. That staff action had been complete is best illustrated by the promptness with which the small units, required to put the plan into effect, were assigned even in the confusion and excitement that must have pervaded the army headquarters upon receipt of the startling news that American troops were across the Rhine.

The key element in the defense of free Europe is the ability to hold on the ground. Western Europe lacks the insulation of wide oceans. Major preparations must therefore be made to hold its lands—by well-armed manpower on the ground, by the great striking force of air power, and by a sea power which commands its surrounding waters and important lines of communication.

President Harry S. Truman

Each of the branches of our own armed forces has its own particular contribution to make to our national defense. Each service also has its role and mission in the defense of the free world. Each nation of the free world also has its mission, whether it finds its emphasis on land, on the sea, or in the air. The implementation of this concept is the source of collective security which the free world is trying to create.

Secretary of the Navy Dan A. Kimball

MILITARY NOTES AROUND THE WORLD

UNITED STATES

Bombing and Gunnery Ranges

More than 15½ million acres of land used as bombing and gunnery ranges during World War II have been inspected and cleared by Army bomb disposal teams and returned to private owners. This work has been going on since 1947, and has cost less than 3 million dollars. Thousands of tons of scrap metal were salvaged from the land, with an estimated value of approximately 700 million dollars. The size of the areas cleared ranged anywhere from 55-acre lots to a 5,675,000-acre area in Southern California and Arizona.—*Armed Force.*

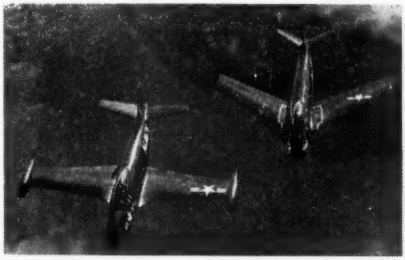
Army Trains

Nearly 40 trains a day are dispatched in Korea by the soldier railroaders of the Army's Transportation Corps. Made up of between 20 and 40 cars each and hauling either 500 tons of cargo or 1,000 passengers, the trains average more than 100 miles a day. The daily dispatch sheets show that about 15 of the trains are mixed—carrying troops and cargo loads to forward railheads; 3 or more are passenger trains; and 2 or more are hospital trains transporting casualties to the rear. The remaining runs are made by freight trains, hauling military supplies and equipment.—News release.

Swept-Wing Fury

A prototype of the Navy's newest swept-wing jet fighter—the *FJ-2 Fury*—recently completed its first test flight.

Powered by a *J-47* turbojet engine, the new *Fury* is considerably faster than its predecessor—the *FJ-1 Fury*. Although its top speed has not been announced, it is rated in the 650-mile-an-hour class.



The Navy's swept-wing *FJ-2 Fury* flying formation with its predecessor—the *FJ-1*.

The new *Fury* has four 20-mm cannons instead of the .50-caliber machine guns carried in the *FJ-1*. It has a range of about 1,000 miles and a service ceiling of more than 45,000 feet.

An improved gun sight, new homing radio equipment, and an improved ejection seat mechanism are included in the plane's design changes.—News release.

'Baby' Jet Helicopter

The Army is developing a "baby" jet-powered helicopter that can be dropped from larger planes, unpacked by two men, and readied for flight within less than half an hour. The craft, designated the

The *XH-26* jet-powered helicopter.

XH-26, is still in the embryonic stage and no construction orders have been placed by the Army to date.

The new aircraft is designed principally for air evacuation transport and supply. It also can be used for observation purposes. It weighs less than 300 pounds, stands only 6 feet high, and can be collapsed into a container 5 by 5 by 14 feet.

With no modification in the basic frame or in the power plant, the plane can carry two men side by side in twin external litter carriers.

It is basically a one-man ship powered by two 16-pound pulse jet engines, one on either side of the rotor blades. When fully loaded for flight, that is, equipped with pilot, radio equipment, and fuel, it weighs 700 pounds. It can obtain speeds up to 80 miles an hour and is capable of flying for an hour and a half without refueling.—*Armed Force.*

Navy Radio Center

The Navy has announced that it is building a million-watt radio station near Snohomish, Washington, and that it will be among the most powerful in the world. Scheduled for completion next year, the new station will enable the Navy to keep in touch with the fleet around the world. —News release.

New Sleeping Bag

A new sleeping bag for Army use, made of quilted cotton stuffed with chicken feathers, has been developed by the Army Quartermaster Corps.

Development of this combination quilt-sleeping bag is the result of several years of Quartermaster research. The idea was to cut down on the use of expensive, hard-to-get wool; use plentiful, cheap chicken feathers; and overcome objections of field troops to the present style wool bag.

The new-style, versatile bag can be used as a quilt in barracks or turned into a sleeping bag for use in the field. In front-line or combat conditions, it can be wrapped around a person effectively and still be thrown off in a single motion if necessary.

It is wind and water resistant, and is covered with treated cotton. Inside it are the processed chicken feathers which increase the bag's warmth 100 percent over the present wool bag.—*Army Times.*

Fatigue Tester

A scientific torture machine with a 500,000-pound squeeze has been developed to test the strength of various types of airplane parts.

Called a fatigue tester, the stretcher-compressor is the largest and most bruising device of its kind ever developed in the aircraft industry. The new unit can pound its pressures as fast as 2,000 times a minute, or as slow as 5 times a minute, surpassing all similar machines.—News release.

Atom Defense Fund

The Federal Civil Defense Administration has announced that it has approved spending almost 54 million dollars to build up supply and equipment stock piles for use if an atomic war comes to this country.

Some 14 states have joined thus far in a program to supply matching funds in the medical stock-piling program. This phase of the buying operation represents more than 17 million dollars of the civil defense outlay.

The remainder of the money thus far approved for the program has been earmarked to supply Government disaster warehouses which the civil defense agency proposes to build in various sections of the country.—News release.

Mountain Exercise

A mountain training exercise involving 22,500 Army troops will be held in the Elkins, West Virginia, area during August and September. The maneuvers, known as "Exercise Pine Ridge," will train troops for cross-country operations in rough mountainous terrain in both day and night movements.—News release.

Nonsinkable Ship

A ship has been developed which is capable of running when the cabin is flooded. Intended for governmental use as a patrol or utility boat, the 26-foot model also will be available in pleasure craft models.

It is claimed that the vessel will not sink when filled with water. During testing, the vessel floated on an even keel even though the water reached a depth of 3 feet inside the hull and began spilling over the stern. The secret of its nonsinkable powers lies in three air vaults. Two steel air tanks built under the cockpit deck and a compartment forward that can become airtight by closing a bulkhead door give it the necessary buoyance to offset the weight of the water and the engine.—*MSTS Magazine.*

More Powerful Jeep

The Army has started production of an improved, more powerful model of the jeep. The new vehicle is 5 inches longer and 2 inches wider than existing models. Powered by a new 72-horsepower F-head engine in place of the present 62-horsepower L-head engine, with improved fuel economy and larger gas tank, the jeep's cruising range is increased from 180 miles to 300 miles without refueling. Other new features include improved brakes, flanged fenders, and a special adapter kit to equip the jeep for arctic, desert, or water use. Snorkel (intake) and snorter (exhaust) tubes allow the engine to "breathe" while submerged. Soft plastic seats, larger springs, and new shock absorbers help to make the driver and riders more comfortable.—Department of Defense release and photo.

The Army's latest model jeep.

Altimeters

Two new altimeters expected to measure altitudes ranging from 25 to 95 miles in the upper atmosphere are currently under development, according to the Air Force's Air Research and Development Command.

One type altimeter is designed for operation between 150,000 and 300,000 feet; the other, between 300,000 and 500,000 feet.—*Army Navy Air Force Journal.*

'Flying Flashlight'

Resembling a large bomb, a huge flashlight beneath the wing of US Air Force bombers lights the way to added destruction. Where vehicles and other objects are

A 'flying flashlight' mounted beneath the wing of a United States Air Force bomber.

suspected but hidden by darkness, the carbon-arc lamp is flashed on and the entire target area is illuminated. Inside the lamp's glass dome nose is a large reflection disk which can be rotated to direct the beam.—*Popular Mechanics Magazine.*

Coal Pipe Line

An experimental pipe line for transporting coal from mine to market is under test near Cadiz, Ohio. From 7,000 to 9,000 tons of coal a day, crushed and mixed with water to form a "slurry," go through the pipes.—*Popular Science Monthly.*

Cold Weather Boots

The Marines' cold weather "thermos" boots, which kept them from suffering frostbite last winter in Korea, unexpectedly produced another benefit (MILITARY REVIEW, Jan 1952, p 67). The 1st Marine Division has reported six verified cases where the boots saved men from having their feet permanently maimed or blown off by land mines and other explosives. Apparently, the new footgear absorbs much of the shock of explosives if not metal fragments. Now, the Marine Corps is testing the boots to improve their shock resistant qualities.—*Army Navy Air Force Register.*

Reservation Expansion

The Department of Defense plans to ask Congress to approve expansion of the Fort Hood, Texas, reservation by 86,500 acres. The increase is expected to permit more effective training at reduced costs.—*Army Navy Air Force Journal.*

Lightweight Resuscitator

The Army's all-out attack on a phantom weapon not used since 1918—poison gas—has added another device to the equipment that soldiers probably will carry to protect themselves.

This item is a lightweight resuscitator which fits into the existing gas mask carrier. Developed by the Army Chemical Corps, it is for use in the field to revive men whose breathing has stopped as the result of inhaling gas.

The device is simply a tube which can be attached to the masks of both the man who has passed out and his rescuer. The rescuer breathes air that he has used himself through the tube and into the lungs of the casualty. Sufficient oxygen is left to revive the man poisoned. There is no danger to the rescuer.

The device is designed for emergency use in the field. It is an addition to, not a substitute for, artificial respiration. It is designed primarily for first aid treatment.—*Army Times.*

Army Reserve Training

The Army has authorized personnel ceilings to provide for the training of approximately 190,000 Reserve officers and enlisted men during annual field training and at Army schools this year. Of the total authorized, 160,000 have been allocated for 15 days of active duty for training on a mandatory basis. This will be the second summer that members of troop program units of the Organized Reserve Corps have been required to attend summer camp. Of this number, 44,000 are authorized for officers and 105,000 for enlisted Reservists.—*Army Navy Air Force Journal.*

Antisubmarine Helicopters

The first six of a planned antisubmarine fleet of automatic pilot helicopters have been turned over to the Navy (MILITARY REVIEW, Jul 1951, p 72). Fleets of such craft eventually will screen convoys from enemy submarines, thus releasing destroyers and patrol sea craft for other duties.—News release.

Paper Thermometers

Thermal indicators made of paper and capable of instantly determining temperatures from 115 degrees to 500 degrees Fahrenheit have been developed by the Army Quartermaster Corps.

The new series of paper thermometers was initially designed to ascertain the thermal radiation of atomic blast, but it is expected that they also will be used for other purposes such as testing the performance of gasoline engines, motors, heaters, and other appliances. The new thermometers are inexpensive, and are made of readily available materials. They consist of white pigment coatings on black paper. Each coating is designed to melt at a definite temperature.—*Army Navy Air Force Register.*

Twin-Jet Bomber

A new tactical bomber for the US Air Force is the twin-jet Douglas *B-66*, which is a modified version of the Navy's swept-wing *A3D*.

The *A3D* has a gross weight in the region of 77,000 pounds, and is the largest and heaviest type of bomber contemplated by the Navy in air group strength. Both the Navy and the Air Force variants will have a crew of three.

The *A3D* is powered by two *J-40* turbojets, but the *B-66* will have two *J-73* turbojets, developing 9,500 pounds of thrust each, with after-burning. The first use of the *B-66* is likely to be in the reconnaissance bomber role.—*The Aeroplane*, Great Britain.

Gas Protector

The Army Chemical Corps in co-operation with the Quartermaster Corps has developed a new airtight, water-cooled suit, designed to protect a soldier against both poison gas and biological warfare. The new outfit is superior to former impermeable clothing used by the armed forces in that it is more resistant to the most recently discovered war gases. Also, the water cooling system permits the soldier to wear it for several hours, whereas former models were extremely uncomfortable and had to be discarded after a short period of time.—Department of Defense release and photo.

The Army's new gas protection suit.

THE NETHERLANDS

Defense Budget

The Minister of Economic Affairs recently announced that the Netherlands would spend about $134,400,000 more on defense this year than in 1951. The Netherlands spent about $403,200,000 on defense last year.—News release.

TRANSJORDAN

Point Four Aid

The United States and Transjordan have signed an agreement providing $2,780,000 in Point Four aid. The $2,780,000 to be contributed by the United States will be augmented by the equivalent of $1,000,000 in dinar to be supplied by Transjordan. The total will be used for development projects designed to increase food production and the use of water resources, and to improve health, education, transportation, and certain industrial facilities.—News release.

BRAZIL

Military Assistance Pact

Brazil and the United States recently signed an agreement to help each other in defense of the Western Hemisphere and the free world. Under the accord, both governments agree to furnish materials, service, and other military assistance within the spirit of the United Nations Charter to promote Western Hemisphere defense.—News release.

MALAYA

Rubber Planting Pushed

The Malayan Government is seeking legislation to compel small rubber growers to set up a systematic replanting program to replace trees dying because of age.

Smallholders, mostly Chinese, grow about one-half the rubber produced in Malaya. The large estates have conducted replanting programs for years, but smallholders have been prone to "milk" the trees as long as possible and then move on to new sites.—News release.

FRANCE

Cost of Living

The French Finance Ministry reported recently that the cost of living had gone up 23.5 percent in France during the past year.—News release.

Patrol Aircraft

The French Navy recently took delivery of the first of 54 former Royal Air Force *Lancasters*. The planes will operate from bases in North Africa, and will supplement the aircraft of the Royal Air Force Coastal Command in the work of oversea patrol.—*The Aeroplane*, Great Britain.

YUGOSLAVIA

Military Equipment

Yugoslavia recently received the first consignment of tanks and other military equipment under the military aid agreement concluded between the United States and Yugoslavia last year.—News release.

Foreign Aid

The United States, Great Britain, and France have announced that they will grant Yugoslavia another 45 million dollars in aid. This amount is in addition to the 75 million dollars already given to Yugoslavia by the three governments.—News release.

SPAIN

United States Embassy

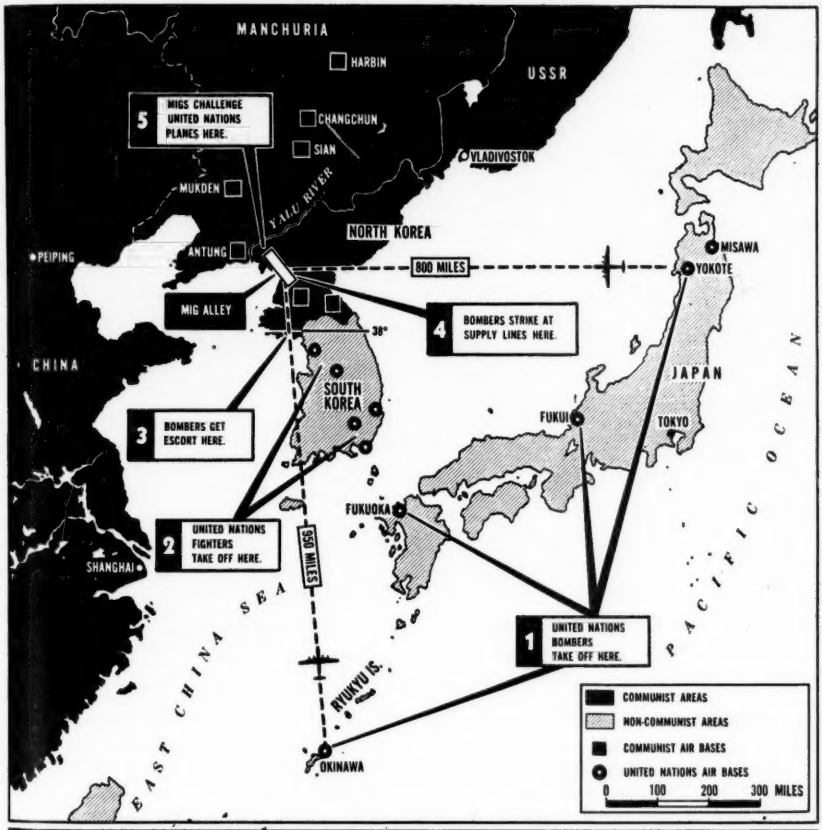
The Madrid City Council has approved plans for an ultramodern embassy for the United States. The new building will be similar to the United Nations building in New York.—News release.

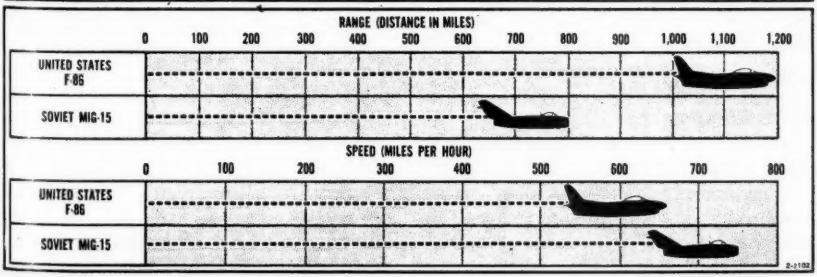
Twin-Engine Transport

A 33-passenger, twin-engine transport—the *C.A.S.A. 207*—is under construction in Madrid. Powered by two 1,800 horsepower engines, the plane will have a gross weight of 33,500 pounds, and a payload of 11,000 pounds.—*The Aeroplane*, Great Britain.

KOREA

Korean Air War—The Pattern and Two of the Planes

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SOVIET MIG-15
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PERU

Fiscal Program

The Chamber of Deputies recently approved a fiscal program calling for revenues of 2,547,047,250 soles ($168,105,118) during the coming fiscal year—the highest in Peruvian history.—News release.

CANADA

Population Increase

According to official census figures published recently, Canada's population has grown 21.8 percent in the last 10 years, and now totals 14,009,429.—News release.

Ground Defense Branch

The Royal Canadian Air Force recently created a ground defense branch to train RCAF personnel in infantry tactics. Under the program, RCAF personnel will be trained in the use of small arms, including light machine guns, bazookas, and mortars.—News release.

Terminology

The Canadian Army has dropped the British term "other ranks" for soldiers below commissioned officer ranking.

From now on, it will be officers and men.—News release.

New Isotope

Canadian atomic energy scientists have discovered a new isotope known as Calcium-41. It was termed a "scientific curiosity" because its "long half-life and soft X-rays make it very difficult to find and isolate."—News release.

NORWAY

Trade Agreement

Norway and Western Germany have initiated a new trade agreement calling for the exchange of 830 million kroners worth of commodities. Norway is scheduled to receive substantial quantities of rolling mill products and coal.—Norwegian Information Service.

AUSTRALIA

Oil Refinery

Plans to establish a 100 million dollar oil refinery at Kwinan, Western Australia, foreshadows an important military and economic step for Australia.

Expected to be in operation by 1956, the new refinery would boost Australia's annual production to 6½ million tons, or about 1 million tons short of the estimated national need for that year.—*The Christian Science Monitor.*

Naval Forces

A Cabinet defense preparations committee has approved an increase in the strength of Australian permanent naval forces from 15,173 officers and men to 17,000. The committee also approved proposals that the structure of the Citizen Naval Forces, which comprise all male naval reserves, be modified; that over-all increases in strength be ratified; and that a Women's Royal Australian Naval Service Reserve be established to be available in the event of mobilization.—*Australian Weekly Review.*

SWITZERLAND

Merchant Fleet

Switzerland's merchant fleet will have a record strength of 36 vessels by the summer of 1953, when 9 ships now under construction are completed.

Switzerland first acquired an ocean-going merchant fleet during World War II, when she was a neutral surrounded by hostiles. In order to ensure food imports, she bought a dozen vessels immobilized in various ports by reasons of war, and set them to sail under the Swiss flag.

Today, there are 27 vessels, with a total registered tonnage of nearly 150,000, doing a good export and import business. They are registered at Basel, but the home ports may be Antwerp, Rotterdam, Hamburg, or Genoa. The crews are mixtures, including a few Swiss.—News release.

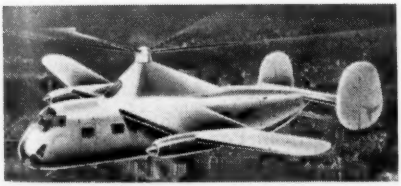
GREAT BRITAIN

Armed Forces

For the first time, the Royal Air Force will have more manpower than either the Army or Navy. The Government estimates that by April 1953 the strength of the three services will be: RAF, 213,000; Army, 207,000; and Navy 133,000.—News release.

Helicopter-Plane

England's version of a helicopter-airplane is the Fairey *Rotodyne*, shown in the artist's sketch below. Main power will



come from gas turbines turning the propellers. Air bled from the turbines will be fed to rotor-blade tips where it will be ignited in auxiliary ramjet units. The rotors will supply emergency power and give the aircraft a steeper take-off.—*Popular Science Monthly.*

New Diesel Engine Developed

All fast patrol vessels in the Royal Navy, such as motor torpedo boats and motor gunboats, are to be equipped in the future with a new high-power diesel engine known as the *Deltic.*

The *Deltic,* stated to be of "revolutionary design," takes the form of an opposed piston two-stroke cycle engine with a power rating up to 2,500 brake horsepower, and is constructed in a triangular form (like the Greek letter Delta) with three crankshafts.

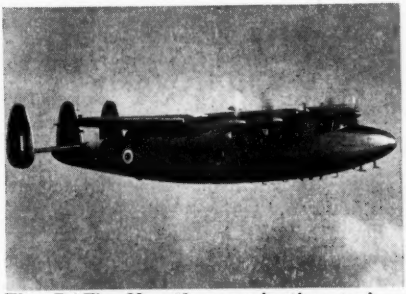
The Admiralty has been concerned for a long time about the use of gasoline engines in high-speed fighting craft because of the high fire risk.—*The New York Times.*

Jet Airliner Service

Hurtling along at 8 miles a minute, twice the speed of conventional aircraft, the British *Comet* recently opened the world's first jet airliner service with a trip from London to Rome and back in 4 hours 46 minutes' flying time.—News release.

Navigation Trainers

The Royal Air Force, under its expansion program, has ordered 30 *Marathon* aircraft to be used as advanced-navigation trainers this year. The planes, each



The RAF's *Marathon* navigation trainer.

carrying a staff navigator, two student navigators, a staff pilot, and a radio operator, will be used on training flights from Britain to as far away as Malta and Gibraltar.—British Information Services.

Radar Landing Aid

British engineers have developed a new radar landing aid for small airfields. Instead of the expensive unit and large team of operators normally associated with radar landing guides, the new device is operated by only one man and the apparatus may be housed in a small space. The unit can pick up planes at a distance of from 14 to 16 miles and up to 14,000 feet. All types of planes, including jets, have been successfully landed by this aid, and air traffic experts predict great popularity for the unit, particularly in small, isolated airfields.—British Information Services.

COMMUNIST CHINA

Women's Air Unit

The Peiping radio has announced that an all-women air unit, including pilots, has been formed in the Chinese Red Air Force.—News release.

BELGIUM

Steel Production

Belgian steel production ended the year 1951 with an all-time high production of 5 million tons, while the Luxembourg industry produced some 3 million tons. The total steel production of the Belgo-Luxembourg economic union for the year was thus 30 percent higher than in 1950.—News release.

CZECHOSLOVAKIA

Arms Output

The Czechoslovak Communist Government has put heavy new demands upon the huge former Skoda armament factory at Pilsen.

The Minister for Heavy Industry has stated that the plant—now named the Lenin Works—would have to turn out 38 percent more goods in 1952 than in 1951.—News release.

SOUTHERN RHODESIA

Economic Assistance

The International Bank for Reconstruction and Development recently lent Southern Rhodesia 28 million dollars to help the British African colony in its 4-year plan of economic development. It was the bank's first loan to a British colony.—News release.

JAPAN

United States Warships

The Transportation Minister has announced that Japan is negotiating with the United States for the lease of war vessels. He said that any ships obtained would be used only in the service of the Maritime Safety Board, the Japanese counterpart of the United States Coast Guard.—News release.

POLAND

Military-Technical Academy

A Military-Technical Academy for the training of officers and the testing of new military equipment was opened recently in Warsaw.—*News From Behind the Iron Curtain.*

WESTERN GERMANY

Population Increase

Western Germany's population has increased approximately 5 million since the end of the war, with the present population total set at 48,195,000.—News release.

Radio Network

The US Army is building a radio network connecting most of its military posts in Germany, thereby lightening the load on the German Post Office.

Heidelberg will be the hub of the network, with major terminals at Munich, Nürnberg, Frankfurt, Würzburg, Kaiserslautern, Wiesbaden, Stuttgart, and Darmstadt.—News release.

TURKEY

Military Appropriations

The Turkish Parliament has approved a national budget with about one-third of its funds earmarked for the armed forces.

The budget totaled about 600 million dollars, with 170 million dollars appropriated specifically for the military. Indirect defense spending and anticipated United States aid will almost double that amount.—News release.

PAKISTAN

Point Four Aid

Pakistan has signed an agreement with the United States for 10 million dollars worth of economic aid. The agreement is an extension of one signed a year ago, under which the United States has been providing technical assistance through the Point Four program.—News release.

FOREIGN MILITARY DIGESTS

Mobile Forces

Translated and digested by the MILITARY REVIEW from an article by Major General Kazimierz Glabisz in "Bellona" (Polish language military quarterly published in England) July-September 1951.

THERE can be no doubt that, with the exception of air forces, mobile forces had the greatest influence on the course and outcome of the last war. They dominated the initial phase of the war, and continued to be a threat to the end, both on the Eastern and Western fronts. They were a synonym for victory, and won for themselves universal appreciation and confidence. However, mobile forces—and particularly armored mobile forces—began to decline almost immediately after the war. The Korean war hastened this process, intensifying the controversy relative to the role of mobile forces in a future war.

What are the causes of this phenomenon, and to what extent have the possibilities of mobile forces really changed?

The concept of "mobile forces" was introduced by the Germans, who also included among their *schnelle truppen* all large mechanized units—armored, motorized, or transported—as well as horse units. Although these forces are, at the present time, by no means the most rapid combat means, the term "mobile forces," as used in this article, will refer to these types of units. Air forces, a faster and incomparably farther reaching weapon of war, fall within an entirely different category. Likewise, long-range rockets and guided missiles are only outgrowths of artillery, or substitutes for piloted aircraft. Airborne forces also must be considered as falling within another category, because they are "rapid" only during the transport phase of their operations. Once they have reached their drop or landing zones, they require a long period of time to reorganize, and their speed is limited on the ground. Moreover, armored forces which enter into the organic composition of the normal infantry division, and which are regarded solely as supporting weapons, do not belong to the category of "mobile forces," even though they possess a potential speed equal to that of independent armored units.

In other words, the conventional concept of "mobile forces" does not require either broadening or narrowing, although more and more of the former functions of mobile forces can and will be supplanted by weapons and means which are faster.

Characteristics of Mobile Forces

Mobile forces should possess both operational and tactical speed; that is, they should be capable of rapid transportation or movement from place to place, and capable of executing rapid and long-range pursuit movements after they have arrived at their destination. Obviously, they

should possess great fire power. The full development of these characteristics depends not only on their organization, command, matériel, strength, and morale, but also upon the enemy, the terrain, and the weather. If poorly commanded, or if contained by a powerful enemy or disadvantageous terrain, they lose their most important characteristic—speed.

As a result of these factors, mobile forces have played a varied role in the past. Regardless of whether they owed their intrinsic speed to elephants, camels, horses, or tanks, they attained the zenith of their successes in the conquests of Ghengis Khan, the incursions of the Tartars, and the initial victories of the Germans in 1939-42. Yet, mobile forces found themselves facing a crisis in World War I when fronts were close and strongly occupied, and the means of defense dominated over the means of attack.

An Offensive Weapon

During the periods of their domination, mobile forces imposed their will on the enemy in the fields of strategy and tactics. On the other hand, during periods of domination of heavy or slow forces, or of a decided preponderance of defense weapons, mobile forces dropped to secondary or subordinate roles and frequently were condemned either to inactivity or to reorganization into foot units, as were the German cavalry units during the period 1916-18.

During periods of changing composition of forces, the role of the mobile forces, although an important one, has been more or less limited and uncertain.

It is sufficient to remind the reader of the German campaigns of 1939-42 in which mobile forces—and particular armored mobile forces—created deep penetrations, at blitz tempo and without great losses, and conducted pursuits and encirclements, crushing weaker or less mobile forces. Above all, they conquered terrain, whereas, generally speaking, the slow forces only occupied it, such as during the period 1915-18, when the main battering-ram was artillery.

During the blitz warfare period of 1939-42, only winter climatic or terrain conditions, or a wearing out of matériel, were able to limit or eliminate the role of the German mobile forces.

A more modest, yet decisive, role was played by mobile forces during the second phase of the last war. In the face of the more rapidly growing power of antitank and defense weapons, they were assigned the role of breaking through the enemy front, or of exploiting a penetration. German mobile forces operated only once offensively (Ardennes), but frequently in counterattacks (Kursk, Kasserine, Medenine, Zhylomierz, Winnica, Normandy, Siedlce, Hungary, and Pomorze). The counterattacks usually ended in failure because of allied superiority in artillery, armor, antitank weapons, or aircraft. Toward the end of the war, even this limited role narrowed down to defensive missions. However, the allied mobile forces remained very active and long range in their operations until the end of the war. In this connection, we must not forget that the allies conducted their operations with increasing superiority, and with the efficient support of aircraft. However, in spite of the more complete air support, allied mobile forces did not play as dominant a role as the German mobile forces did during the first phases of the war.

This phenomenon, as well as the fact that even the heaviest tanks (*Tigers*, *Royal Tigers*, and *Stalins*) were destroyed by medium tanks, antitank guns, or bazookas, brought about, after the war, a feeling of skepticism regarding the future of mobile forces. This, in spite of their outstanding wartime achievements!

The Battle With the Projectile

More and more, there has been talk about the "death" of the armored weapon—of the loss, by armor, of the battle with the

projectile. This "assassination" of the armored forces has kept step with the further development of the antitank weapons (ground and air), which has been exceeding the slow progress of the armored weapon. The relatively small role of the armored and mobile forces in the Korean conflict, as well as enormous losses suffered by the Communist armored forces there, has increased the skepticism about the future roles of such forces.

However, this skepticism is not shared by the promoters and enthusiasts of mobile forces. What is more important, it has not prevented or retarded the development of mobile forces on either side of the Iron Curtain.

There are, however, several points which even the enthusiasts and promoters of mobile forces admit: the projectile has the advantage over armor, at least for the time being; that a further thickening of the armor plating is not the answer to the problem; and, therefore, that mobile forces must be adapted to the changed conditions by some other means if they are to play an important role in future warfare.

Moreover, this adaptation must include changes in almost all fields, because employment and organization are as important as equipment and supply.

Objectives which are still more extreme are put forward by those who believe that mobile forces, even if they are radically revamped, could not play as decisive a role as they did during the period 1939-42.

German panzer forces demonstrated the true role of mobile forces during the 1939-42 campaigns, conducting blitz operations without great losses.—*Paramount News* photo.

Objectives Listed

Objectives which both categories of "reformers" suggest include:

1. In the operational and tactical fields:

a. Assure better co-operation with the air forces, and never permit the enemy to achieve air superiority.

b. In the event of a compact front, do not use the mobile forces to *effect* the break-through, but, instead, reserve their strength to *exploit* the break-through.

c. Develop the mobile forces so that they can operate at night, and, therefore, capitalize on their speed and eliminate the counteraction of enemy air forces and ground antitank weapons.

d. Employ mobile forces in suitably dispersed masses, in depth.

e. Provide the means whereby all combat and service units can keep pace with the leading elements.

f. Make use of air transportation for carrying mobile forces into the enemy's rear areas.

2. In the organizational field:

a. Form combat teams from the mobile forces, as the Germans did toward the end of the war.

b. Reinforce the motorized infantry in the armored divisions.

c. Do not mix different types of tanks together in one unit.

d. Substitute tank destroyers (turretless tanks) for some of the tanks in the mobile forces.

3. In the equipment field:

a. Abandon any further race with the projectile or mine, unless there is found a sufficiently cheap way to manufacture a lighter, more resistant steel. Further, until such an alloy is discovered, do not engage in the mass production of heavy or medium supporting tanks for mobile forces, but, rather, produce masses of powerfully armed light tanks.

b. Place the main emphasis on powerful armament, speed, and range—and the least emphasis on armor protection.

c. Provide all tanks with steel or wooden "aprons" to reduce the effectiveness of armor-piercing projectiles.

d. Increase the muzzle velocity of tank weapons, not the caliber.

e. Reinforce the upper parts of the tanks, in order to provide greater protection against aircraft rockets and high trajectory weapons.

f. Increase the range of tanks by the introduction of the more economical diesel engine.

g. Provide all units accompanying the armored elements, both combat and service, with cross-country vehicles, so that they are not road bound.

h. Increase the width of the tank treads to reduce ground pressure and reduce slippage on ice or asphalt.

i. Provide armored units with infrared devices, in order to permit them to move and fire at night.

j. Provide tanks with gyro-stabilizers, in order to increase the accuracy of their fire while moving.

k. Keep the tank silhouette as low as possible.

4. In the supply field:

a. Make greater use of air supply.

b. Improve the divisional and regimental repair services, so that damaged tanks will not have to be moved to the rear for repairs.

This list of varied, and sometimes contradictory, objectives is explained, on the one hand, by the severity of the present crisis of the mobile forces and, on the other hand, by the unquestionably just assumption of the "reformers" that this crisis must be overcome if mobile forces are to play a decisive role in future warfare.

Reforms Will Be Slow

The advocates of truly revolutionary reforms doubtless realize that many of these objectives cannot be accomplished in the near future, because of their financial, technical, organizational, or training implications. Moreover, they probably realize the problems of command and supply which are connected with rapid or radical changes. It is sufficient to call attention to the enormous increase in fuel and ammunition consumption which would result from such changes.

In spite of this, the majority of the military commentators of the West believe in the great future of mobile forces—partic-

ularly armored forces—basing their optimism on the following arguments:

1. Jet aircraft, which will be the primary weapon of the tactical air forces in the future, will be less menacing to mobile forces because of their excessive speed and limited time over the field of battle.

2. Modern forms of combat by mobile forces, especially the possibilities of their employment in night operations, decrease the effectiveness of antitank means, especially aircraft.

3. The increased cross-country capabilities of mobile forces speed up their movements and make it difficult for the enemy to build antitank obstacles.

4. The possibility of transporting mobile forces by air, and dropping them into the enemy's rear areas, increases their potential for exploitation operations.

5. Considerable time will pass before guided missiles or tactical atom bombs will be able to exert any great influence on the course of operations.

6. The freeing of part of the services from roads will assist in overcoming many of the supply problems, decrease the danger of traffic congestion, and reduce the possibility of losses from enemy aircraft.

Although these arguments may be convincing, not all are based on the existing situation. Furthermore, many of the assumptions on which they are based (especially those concerning equipment) will not be developed for many years.

What About the Future?

Both the East and the West are modernizing their mobile forces and antitank weapons. These modernization programs include not only improvements in equipment, but in organizational structures as well.

Depending on the success of these programs, and the time that will elapse before a possible future conflict, mobile forces may be capable of again playing a decisive role in combat.

As regards the "uncertain future" of mobile forces, increased developments and modernizations are not only conceivable, but necessary. Why? Because the greatest enemy of armor is armor, and the greatest enemy of the mobile force is another mobile force.

Enemy armored or mobile forces may be held without the aid of equally powerful armored or mobile forces, but without these forces it is not possible to undertake a major offensive, exploit the successes of the foot troops, or carry effective aid to air-landed forces. Mobile forces may not be entirely suited for deep penetration missions, but they will be very important, and employed frequently in such operations. Moreover, although they will continue to be primarily an offensive force, they will be capable of playing important roles in defensive operations.

For these reasons, mobile forces—and particularly armored mobile forces—will continue to be an important and indispensable part of modern armed forces, although (even after considerable modernization) it will not always be possible to employ them as freely or as effectively as they have been employed in the past.

In Defense of the Horse Cavalry

Translated and digested by the MILITARY REVIEW from an article by Captain Luiz Felippe de Azambuja in the "A Defesa Nacional" (Brazil) August 1951.

IT IS hoped that the reader will not expect to find any original ideas or new theories, because the material presented is not new in itself; rather, it was the author's intention to compile and arrange existing material in a readable, logical sequence for a better and easier understanding of the subject.

It is hoped that through a careful study of the various points presented, one may find conclusive proof of the necessity for the existence of the horse cavalry.

Purpose

It is the purpose of this article to prove that the horse cavalry has not yet disappeared, but continues to be needed on the battlefield.

The Need for Horse Cavalry

Victory in war, as has been so often repeated, stems from the close and perfect co-operation of all elements which operate the war machine on land, sea, and in the air. This being true, the same may be said with regard to any of the components of the armed forces. Thus, to take it for granted or—still worse—to state that the horse cavalry has ceased to exist is to show a lack of general knowledge of the universal military organization, and especially its relationship to the South American countries.

The laws of evolution cannot be denied, but they do not necessarily imply great strides. They require a slow process of adaption, especially those related to the art of war. The hurried acceptance of radical transformations preceding from the phenomenon of evolution is merely a show of excentricity. In our various military schools, even those which study the wars of the future, the courses on cavalry have not been excluded, and students are trained in the classical employment of that arm, *duly adjusted to the contingencies dictated by evolution.*

The Principles of War

It can be said that, in a general way, nations express their principles of war in various forms, but keep, in essence, the same unchangeable meaning which characterizes each one. Therefore, let us take as a basis the United States doctrine, which establishes nine principles of war, namely, *the objective, simplicity, unity of command, the offensive, maneuver, mass, economy of forces, surprise,* and *security.*

The relative importance of each of these principles cannot be pre-established. The application of one depends upon the others, in varying degrees, depending upon the circumstances. However, the relationship which exists between them will not influence the considerations which will be given to each of the seven which have been selected for study. We will not refer to the principles of simplicity and unity of command, because they do not directly relate to the subject under discussion.

The Objective

The objective refers to the concentration of all effort toward the accomplishment of a common mission. This, in certain operations, is divided into several parts, like the pieces of a puzzle, and each one is distributed to the different elements which integrate the forces as a whole.

In essence, the march to the objective is the imposition of our will on the enemy. It includes various phases, to which each element contributes its own particular effort.

Each combat element possesses its own peculiarities of employment, resulting from its individual characteristics. If these char-

acteristics are kept in mind, they will render their optimum effort.

From this, one will see that in order to reach the objective and conquer it with speed and economy, the commander must have at his disposal elements which, by their organization, are able to face and overcome the enemy opposition, in each phase of the combat, until the successful conclusion of the operation.

The Offensive

The aphorism that only offensive action can spell victory is already too trivial. Victory is always possible for the force which has the strength to launch an offensive—and is able to choose the most opportune time for its beginning. However, circumstances may demand a period of waiting, during which time the force may have to assume the defensive until the proper time for the offensive. During this period, everything must be done to deceive, delay, disturb, and displace the enemy, and attract him into a position which favors the attacking force. This type of mission requires a specific element, whose employment will not weaken the force which will launch the attack. It also demands an element which has fire power and tactical and strategic mobility, in order to accomplish this difficult mission.

Maneuver

The increased tempo of modern warfare has imposed the necessity of having elements with great strategic mobility, which can be directed quickly at the objective with a minimum expenditure of men and matériel. Moreover, during the battle, the envelopment is the maneuver of surprise "par excellence," while the turning movement is the power. Both maneuvers depend on the mobility of the force, which can be either tactical or strategic, depending upon the communications net.

Mass

Mass implies the imposition of our will *when* and *where* it is deemed more opportune. It is through mass that the commander acquires the absolute moral and material superiority, which will enable him to strike a decisive blow where the enemy is weakest or where he least expects it.

Therefore, to mass the forces at the desired location, it is necessary to displace the troops to this point or to maneuver them; but a concentration of this nature has a definite offensive character and, as such, demands the existence of an objective. The concentration point should be one which offers the best chance of reaching the objective as rapidly as possible. Thus, we see that all the principles stem from this one.

Economy of Forces

Economy of forces consists of *doling out* the means in accordance with the mission: "He who gives the mission gives the means."

Each element possesses its own special aptitude for the accomplishment of missions which are peculiar to them; and this should be borne in mind when determining their employment. If this fact is ignored, it might cause premature waste of valuable effort—which should be economized.

In many cases, the commander will have to decide on the adoption of a defensive attitude in one section of the front while assembling the necessary means to provide superiority in another. This diversity of offensive and defensive actions requires elements especially fitted to perform both tasks.

The defensive to "gain time" is a type of action which may take the form of "fencing." The troops designated for such action have to be committed on a wide front, exploiting to the utmost their tactical mobility, yet restraining their actions so that they do not become involved in decisive engagements. It is their job to draw the enemy into positions which increase the possibility of defeating him

through subsequent operations or maneuvers.

Surprise

The principle of surprise is like the finishing touch of the intelligent employment of the other principles. It possesses two sides in that it not only aims at surprising the enemy, but also involves the avoidance of being surprised by him.

Surprise can be promoted through the introduction of a new arm or device on the battlefield, or through the adaption of known methods which have been abandoned by the enemy.

The surest way to avoid surprise is to estimate correctly, during peacetime, the exact and real war potential of our possible enemies, so that countermeasures can be integrated in our military structure.

Security

It is through the principles of security that the commander acquires the necessary freedom of action for mounting and executing his maneuvers.

Security promotes a favorable atmosphere for the application of the other principles. The loss of the initiative may not spell immediate defeat, but it is a direct road thereto.

All echelons, especially those which are responsible for the most important problems of national security, owe obedience to security.

Since we are conferring such an importance to this principle, let us study it in conjunction with the others in order to verify whether the conclusion at which we will arrive confirms such a concept.

Victory is obtained through the destruction of the enemy, and to accomplish this it is necessary to apply the principle of the offensive. However, the offensive originates the implicit existence of an objective, which, to be reached with success, requires superiority of means, that is, sufficient mass to impose the will of the attacker. Moreover, this mass, in turn, must be concentrated or maneuvered with a view to placing it in the most favorable position.

It is impossible to be strong in all points; to be strong at one point requires that we economize at others. Moreover, this process of providing mass must not be detrimental to the over-all maneuver. The maneuver, in turn, must be prepared with the element of surprise in mind, to avoid a counterattack from the enemy, which, if it does not bring about our defeat, will increase casualties.

And this freedom of the commander—this faculty of thinking, deciding, acting, ordering, and leading—where does it come from? From no other source than the freedom of action which was given him through the correct application of the principle of security. Therefore, it is logical to conclude that security is imperative for the execution of the maneuver and constitutes a permanent need of the commander in battle. In order to provide the commander with the information he needs to maintain security, he must have a security force. This force must be well trained and possess the following characteristics: speed, fire power, flexibility, range of action, and the ability to operate in any terrain and in all types of weather.

Conclusions

A brief study of the foregoing characteristics identifies the horse cavalry as the arm "par excellence" for the accomplishment of security missions. Especially prepared for this type of work, it constitutes a valuable element in the hands of the commander.

Once the requirements of security are satisfied, the objective will be in view. At that time, the horse cavalry, as a mobile reserve, will be a trump card in the hands of the commander.

It may be argued that in the last war horse cavalry was absent from the battlefields of Europe and the Pacific. However, the seas, the nature of the operations, and the geographical conditions were factors

which precluded the employment of such an element as cavalry. In spite of this, many agree that if the allies had employed horse cavalry, particularly in Italy, victory would have been won quicker and more economically.

Another objection might be raised by the fact that the Americans have replaced their horse cavalry with tanks. While this is true, it is also an American solution to an American case. To those who are impressed with the example of the United States, we suggest that they view the problem in its over-all aspect and not as a single case; that is, they should view the problem from the point of view of Brazil, and attempt to find a solution that will be to our best interests.

The careful interpretation of the phenomenon of evolution and the detailed study of the tactical, economical, geographical, and historical factors analyzed objectively by the light of our own (Brazilian) situation have guided and inspired, without doubt, the adequate degree of modernization which should be introduced in the organization of our cavalry divisions, so that the new policy should not determine the disappearance of their indispensable qualities of flexibility, fire power, and the ability to operate in any terrain and in all types of weather.

The sensible policy of "not too much horse, and not too much motor" has maintained the existence of a "nucleus of horse drawn potential" in our cavalry division at a happy medium—in the interest of its ability to operate in any terrain and in any type of weather. The introduction of the motor in balanced quantities has considerably increased the capacity of investigation of the cavalry division and the ability of its commander to impose his will in a wider range and with greater speed.

The storm which descended upon the cavalry has subsided, and once more it has emerged victorious. The controversy concerning horse *versus* motor needs only a chance to prove itself because the final answer is in the organization of the present cavalry division, which permits it to explore, cover, and combat.

An Attack on Defense

Digested by the MILITARY REVIEW from an article by Lieutenant Colonel E. F. Aitken in the "Australian Army Journal" November 1951.

***"SHAMMAH . . . stood in the midst of the ground, and defended it, and slew the Philistines: and the Lord wrought a great victory."*—II Samuel 23:12**

WERE Shammah here today he would find defense teachings vastly changed. Modern weapons, improved techniques of the attack, and a more profound tactical knowledge have altered the entire conception of defense. In recent years, particularly since World War I, many precepts have been discarded: deep dugouts, static fortifications, and lines of men standing shoulder to shoulder have all been cast aside. Shammah would hear us speaking of defended localities, defended areas, reverse slopes, and the like.

Outdated Dispositions

That is the point of this article: We merely speak of them, we pay them lip-service, but continue to adopt outdated dispositions.

Let us see what usually transpires. The present-day student of tactics approaches his defense problem with a confidence born

of considerable knowledge. His appreciation of the situation may be masterly, but —and here is the point—he will always end up with a locality. He will be careful to point out that it is a defended area, but he will have mutual support between battalions, brigades, and even divisions in a corps. He has, in effect, a corps defended locality, and, owing to his close dispositions, he soon runs out of troops. The exercise usually allows him to use an armored or light-armored formation to extend the position, but this can do little more than to ease his guilty conscience. And still he is short of troops; his dispositions are so tight that an enterprising enemy would bypass his position altogether.

That is the first point of criticism: we always cover all the ground with men, and much of the ground we occupy bears very little relation to defense of the vital ground.

Let us take a second point. What frontage and depth might an infantry battalion be expected to hold? This question is really tied up with the first point.

Defense Teachings

In France, during World War I, an infantry battalion with two companies in the line usually held from 800 to 1,000 yards of front, and one or two companies were sited in depth—in this period in support and reserve lines. Between the wars, and certainly well into World War II, we were taught that, as a guide, we should allow 100 yards for sections, 220 yards for platoons, and 400 yards for companies. In other words an infantry battalion usually held from 800 to 1,000 yards of front, and one or two companies were sited in depth. The only real difference seems to be in map marking. In 1914-18, the lines enclosing company positions were elliptical in shape and in 1938 they were drawn as circles. The introduction of more and modern weapons seems to have made no difference.

Localities *versus* Areas

The modern defensive system described in Military Training Pamphlet No. 3, dated 1943, first drew attention to the difference between localities and areas. Localities were defined as "defended posts grouped together in mutual support to form defended localities, designed for all-round defense, into which penetration will not be accepted by their garrisons." Defended areas were described as "localities . . . grouped together in depth . . . but into which temporary penetration (between localities) will be accepted."

We disregard the phrase "localities grouped together in depth" and continue to lay out our defended localities in the same old way. Perhaps, the rings around our companies were drawn closer to the actual positions held so as to create the impression of gaps between localities, but it is an indisputable fact that our infantry battalion still held 800 to 1,000 yards of front, and one or two companies were usually sited in depth.

If you lay out an infantry battalion without any reference to ground—and ground is most important—and site two companies, two platoons, and two sections forward, and allow a nominal space between them, you will still occupy 800 to 1,000 yards of front and, of course, you will still have your one or two companies in depth.

Time to Change

Reverting now to my point of criticism, I suggest that, despite modern weapons, the wealth of recent experience, and new techniques, we still cling to outdated layouts, and delude ourselves into thinking that we practice modern defense. Shammah would be sure to be puzzled.

Let us peer into *The Infantry Division in Battle, 1950*. First, it states that depth is necessary "to prevent deep penetration in the case of enemy attack and to break up his attacking units." Deep penetra-

tion: not groups of infantry overrunning a few forward company localities, but deep penetration by armor attacking on a narrow front. That is what is envisaged. The whole emphasis is on depth. Read the definition of a defended area: "An area of operational responsibility containing a group of localities organized in depth; for example, a battalion area." One other passage from the same pamphlet reads: "The divisional sector will contain a number of defended areas in depth, sited so that the enemy attempting to break through must capture them in turn before he can make any serious penetration. These areas will be the responsibility of brigades and be capable of being held by battalions in all-round defense."

Depth and Frontage

Depth and frontage are interrelated. The pamphlet lays down for consideration "the frontage allotted, which must be balanced against the need for depth and the troops available." Nevertheless, you cannot read into the book that the entire frontage should be covered with troops. On the contrary, the introductory sentence to the section on the defensive layout states, "It is neither possible nor desirable under modern conditions of war to maintain continuous lines of defense. . . ."

There appears to be a universal fear of enemy penetration between defended localities which makes the present-day student of tactics try to cover all the intervening ground. This has the effect of creating a larger locality. What is wrong with having gaps between localities? Why worry about penetration into the defended area? If the enemy bypasses one locality or penetrates between them, he is no further toward achieving his aim. In fact, he would be in a precarious position with both his flanks exposed. If vital ground has been chosen correctly, it will be necessary for the enemy to secure it if he is to be successful in achieving his aim. It follows that if localities are sited on correctly chosen ground, the enemy must attack those localities before he can seize the vital ground. And how much more difficult will it be for him to achieve his aim if the defense has been organized in depth in front of the vital ground?

Without reference to ground, the question of the amount of frontage and depth which an infantry battalion can hold can only be partly answered. It is immediately obvious, however, that a series of localities sited without regard to mutual support merely would invite defeat in detail.

An enemy attacking one locality must be shot at by at least one other locality and the fire of all supporting arms should be available to the locality being attacked.

In low, rolling country free of major tactical features, the frontage and depth of a battalion defended area could well be in the nature of 2,000 yards. Similarly, if the approaches were limited, extra depth would be possible and 2,500 yards need not be considered excessive. In country intersected by hedges and small farms or broken by minor tactical features, the distances above might be reduced, but this need not be the usual procedure. The point is this: In modern defense, a commander will never be able to afford to occupy ground which is not essential to the enemy.

If the nature of this ground is such that there are wide gaps between localities and defended areas, the gaps must be accepted or blocked by every artificial means. Let us continue to draw circles around our company localities, but please let the ring defining the battalion defended area assume its many shapes—mostly long in depth and narrow across the front.

Reverse Slopes

My third criticism is our attitude toward reverse slopes. This is a strong criticism. From the time our student of tactics is introduced to his subject he knows about the need for concealment.

The Infantry Division in Battle, 1950, lays down concealment as one of the three main factors upon which the successful defense depends, and there is none who would question its importance. However, give our student a feature to hold and you can be sure that his circles are drawn on exposed forward slopes, where digging and movement can be observed for miles. There was a time during the last war when everbody looked for reverse slopes, but that was a time when reverse slopes were fashionable. Now, like last year's styles, we discard them.

Let us see what the pamphlet has to say on this subject. First, it states: "Defended localities must be concealed. The requirement of good observation must be balanced against the advantage of reverse slope positions." Later on, it states that the division commander must consider "the concealment of defended localities, paying particular attention to reverse slopes."

The pamphlet by no means plays down the need for observation; in fact it lays down that the value of observation to the defense and the desirability of denying it to the enemy will influence the selection of the actual ground to be held. However, it also counsels to resist a natural inclination to go forward if it results in foremost defended localities being badly situated under enemy observation. The positioning of defended localities in exposed positions will result in unnecessary casualties, and, consequently, the lowering of morale of the troops.

The advantages of a forward slope are at the same time its greatest drawback, because the opportunity for long-range observed fire exists equally for the enemy. Often the terrain behind these foremost defended localities allows good lateral communications. In ideal reverse slope conditions, the heavy weapons of the defense can fire on the crest without endangering our own troops at the same time the attacker is deprived of his long-range, flat trajectory weapons. The advantages of the reverse slope position are numerous and yet present-day students of tactics are still reluctant to use it. In the last war, in Europe, reverse slopes were not treated as a novelty, but as a life-saving necessity. In Italy, in 12 months of heavy fighting, one Canadian unit occupied nothing but reverse slopes. If observation for artillery and mortars is obtainable from behind or on the flank of a reverse slope position, that position should be the logical one to hold.

The chief disadvantage of holding a reverse slope position is that the entire weight of the attack, almost in its original strength, descends suddenly and at close range upon the defender on the ground. Consequently, the troops holding a reverse slope position must be well disciplined and possessed of a determination to fight it out at all costs.

However, as Shammah would have said, "This quality applieth likewise unto me—it changeth not."

It seems that we must learn and relearn with every war that the ultimate decision in war—and the greatest amount of risk—rests upon the foot soldier, who must meet the enemy face to face on the ground and contest him for that ground.

General J. Lawton Collins

The Situation in Indochina

Digested by the MILITARY REVIEW from an article by Major M. D. Malgonkar in the "Military Digest" (India) October 1951.

INDOCHINA, or, to be more exact, Vietnam, today enjoys the unique if somewhat peculiar distinction of having two governments, each being duly recognized by several international powers. To explain this as just another offshoot of the cold war is, apart from being an oversimplification, not entirely true. For it is also largely the result of the national aspirations of the Indochinese people to free themselves from French domination. Moreover, there is nothing "cold" about the war that has been raging in Indochina for the last 5 years. This article attempts to present an objective study of the situation in Indochina.

Geography

Indochina comprises five states: Cochin China, Annam, Tonkin, Laos, and Cambodia. The total area of the country is 286,000 square miles which makes Indochina slightly larger than Burma. Its country is mountainous and covered with dense tropical forests; a veritable guerrilla paradise. Three-fourths of the country is wild and hilly jungle, very sparsely populated. The population is concentrated in what are known as the two delta areas, as well as along the narrow strip of lowland on the eastern coast of Annam. It is important to remember the delta areas. One of them, the delta of the Mekong River, is in the south. The other, the delta of the Red River, is in Tonkin in the northeast. The rainfall is heavy, particularly along the coast, and the country is subject to violent typhoons and tidal waves. The heaviest rains and the worst typhoons occur during the months of August and September.

Resources

The two delta areas are veritable "rice bowls." They are intensively cultivated, admittedly by methods which are far from modern, and produce rice in quantities far in excess of Indochina's needs. Even today, after 5 years of bitter war, Indochina has an exportable surplus of rice. Tea and tobacco also are grown, as well as rubber, which is the economic backbone of Southeast Asia. The country also is rich in mineral resources, particularly coal, zinc, tin, and copper, but so far these resources have been hardly tapped.

The People

The total population of Indochina is about 27 million, of which nearly two-thirds are Annamites who inhabit the two delta areas and the fertile coastal lowland of Annam. The Annamites are closely related, culturally and physically, to the Chinese. The remaining population is made up by Cambodians, Laotians, and Chams, to say nothing of a large number of foreigners, particularly Chinese and Indians.

History

Toward the end of the eighteenth century, when the process of empire building by the major European powers was at its height, there came to this rich and fertile land a French missionary. He persuaded the King of Cochin China to sign a treaty with France. This penetration by France proved to be the proverbial "thin end of the wedge." There is no need to follow the subsequent course of French expansion in Indochina which took place more or less according to the pattern so familiar all over the East; suffice it to say that during the next hundred years French influence continued to grow and Indochina became French Indochina.

By 1897, the French had established Cochin China as a colony of France, and the other four states as her protectorates.

They ruled with a governor general at Hanoi as the head of all Indochina. Cochin China, being a direct colony, was administered by a governor and each of the remaining four states had a resident. There were, in addition, a host of subordinate French officials to assist the governor and the residents. The three states of Annam, Laos, and Cambodia nominally retained their kings whose position was rather analogous to the ruling princes of prepartitioned India. The real power was wielded by the French officials.

French rule in Indochina was carried on strictly along colonial lines. In the interest of the French industry, a purely agricultural policy was imposed and the economic development of the country came to be neglected. Furthermore, lulled by the false sense of security then prevailing among the colonial powers in the East, the arrangements for the defense of Indochina also came to be neglected. Consequently, in 1942, Indochina, the "most profitable segment of the French Empire," was occupied by the Japanese without any resistance on the part of the French troops. There were, of course, many redeeming features; for instance, France herself had been occupied and the Vichy Government was collaborating with the Axis powers, but even so it cannot be denied that the military preparedness of Indochina was far from satisfactory.

Busy with their campaigns, the Japanese were content to use Indochina merely as a base for operations; they had no desire to tie down their forces in Indochina. Naturally, they made the fullest use of the large quantities of rice and other products of the land, but, for the next 3 years, they did not interfere with the internal politics of the country, that is, at least not in a direct manner. During this period, the Japanese with their talk of "greater Asia" and "co-prosperity sphere" gave a considerable impetus to the national aspirations of the Indochinese people and fostered among them a strong desire for freedom. By 1945, the Japanese seemed to have realized that their time in Indochina was up, whereupon, as a last act of graciousness, they decided to free the Indochinese people from French bondage.

As stated earlier, the French had retained the three kings of Annam, Laos, and Cambodia in a subservient role. The Japanese decided to make a gift of freedom to these rulers. Furthermore, they decided that the two remaining provinces of Cochin China and Tonkin should be added to the Kingdom of Annam to form a strong and viable state of the Annamese people—the State of Vietnam.

To secure the consent of the three kings to their plan was a task none too difficult, for who can blame these rulers for accepting the gift of freedom from foreign subjugation, whatever the motive behind such a gift? Then one day early in 1945, the Japanese brought about their *coup*. They attacked and captured the French garrison, threw out all European officials in the administration, and replaced them with people of their own choice and announced the grant of freedom to Vietnam, Laos, and Cambodia.

For a proper understanding of what follows, it is important to bear in mind these new divisions of the five original provinces of Indochina, namely Annam, Tonkin, Cochin China, Laos, and Cambodia. The first three were grouped together to form Vietnam. The other states, of course, remained as they were.

Thus, the Republic of Vietnam came into being. Although born in this manner, Vietnam was not entirely an accident of war nor was it a purely puppet state sponsored by the Japanese. It had deeper roots, for the struggle of the Annamites for independence had been going on for some time and a free Vietnam to them was a fruition of their efforts. Despite outward appearances, therefore, the new state had from its very inception a strong national character.

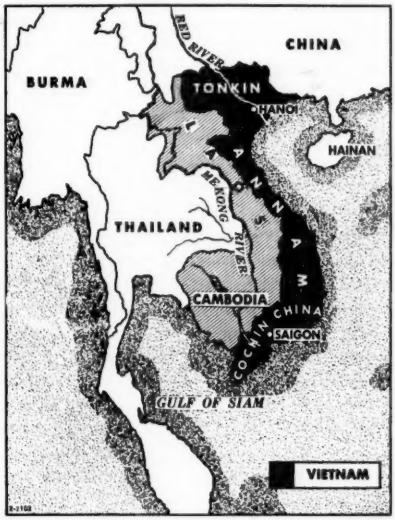
Background to the Present Struggle

With the Japanese surrender, the Emperor of Annam left Indochina, and out of the administrative chaos that ensued emerged a new leader, Dr. Ho Chi Minh. In August 1945, his party, the Vietminh, assumed control of the Government. The first act of this Government was to proclaim the independence of the State of Vietnam; the second was to annul all treaties and engagements with France.

This was the situation which met the French when they returned to reassert their control over Indochina. What is more, they were also faced by a strong guerrilla army, that of the Vietminh Party, an army which was well organized and armed liberally with both French and Japanese weapons. The French soon realized that "to begin where they had left off when the Japanese came" was not possible and undertook negotiations with Dr. Ho Chi Minh's Government. However, these negotiations were marked by a total absence of concession on either side and were doomed to failure.

With the breakdown of the negotiations, the war in Indochina began in earnest. Numerically weak, the French Army was unable to cope with the nationalist struggle which was gathering momentum. Having just emerged, somewhat shaken, from a major conflict, the French were reluctant to plunge headlong into what might turn out to be another full-scale war. The French also realized that some sort of concession must be made to meet the national aspirations of the Vietnamese people. They, therefore, set about trying to find "a political solution" to settle the problems of Indochina.

This political solution took the form of setting up a French-sponsored State of Vietnam, autonomous within the framework of the French Empire and headed by a Vietnamese leader. The choice of this leader was somewhat difficult for he had to be someone who would be in tune with the French way of thinking and who, at the same time, also would command the respect of the Annamite people. This choice fell upon the ex-Emperor of Annam and the head of Japanese-sponsored Vietnam. Accordingly, in July 1947, the French announced the establishment of a reconstituted Government in Vietnam with Bao Dai at its head. Bao Dai, who was then in exile, was not at all keen to accept this



new role and it was not until 1949, after a great deal of persuasion, that he actually returned to Indochina as the head of the Government of Vietnam.

Some 2 years now have passed since Bao Dai's return to Indochina, but the war in that country is now no nearer its end. On the other hand, the fighting recently has become even more fierce. The French had hoped that Bao Dai would provide a focus for drawing off the genuinely nationalist elements in Vietnam from the Vietminh fold, but so far the number of such converts has been insignificant. Militarily, there is little improvement in the situation. The increase in the strength and

equipment of the French Army is almost evenly balanced by the improvement in the training and equipment of the Vietminh Army. Beginning as mere "hit and run" guerrillas, they are gradually developing into real soldiers capable of giving organized battle in the open.

It is important to remember that the war in Indochina is almost solely confined to Vietnam. The other two states, Laos and Cambodia, have not been affected by the struggle. The respective kings of these two states have signed treaties with France and they are quite content to remain within the framework of the French Commonwealth.

The Present Situation

After the fall of China, the fighting in Indochina began to assume a different complexion. The struggle which began as one solely for the liberation of Indochina from foreign domination gradually became more and more influenced by the Communists. This was a somewhat natural result, because the only sympathy and help the Vietminh leaders received was from Communist China. The Vietminh, therefore, gradually veered more and more toward the Communist countries. On the other hand, the French began to receive increasing support from the Western democracies.

The 5-year-old war in Indochina thus became absorbed in power bloc politics. The French now insist that the Vietminh are out-and-out Communists and that in opposing them they are not in any way suppressing the true nationalism of Indochina but are really fighting communism. The Western democracies—the United States and Great Britain, in particular—go a long way toward accepting this view. They believe that what the French are fighting in Indochina is world communism; that in resisting the Vietminh they are doing a great service to the free nations of the world by preventing the Communists from obtaining a foothold in the vital area of Southeast Asia.

The sympathy of the two power blocs for the opposing sides in Indochina has been evident for some time, but it was not openly declared until early 1950. The Chinese Communist Government was the first major power to accord recognition to Dr. Ho Chi Minh's Government as the real government of Vietnam. This was followed by the Soviet Union in January 1950, when she too announced the recognition of the Vietminh Government. On the other hand, in February 1950, Great Britain and the United States announced their decision to recognize Bao Dai's French-sponsored Government as the real government of Vietnam. Recognition by other countries has more or less followed the pattern of cold war politics.

It is thus that the two governments in Vietnam, both claiming to represent the true nationalism of the country and in armed conflict with each other, have been formally recognized by the opposing sides in the cold war. Political recognition by these opposing sides has increased the tenseness of the situation in Indochina. The basic cause of most of the trouble, of course, is the unfortunate mingling of the nationalist aspirations of the Vietnamese people with communism. The wider issues of power politics have tended to envelope and distort this local struggle. On one side, there is a danger that the continuous thwarting of the nationalist aspirations of the Vietnamese people may lead them irrevocably into the Communist fold. On the other side, there is equal danger that obsession with the Communist bogey may make one lose sight of these national aspirations altogether. The just solution of the problem of Indochina will prove a real test of statesmanship.

Statesmen and Commanders

Digested by the MILITARY REVIEW from an article by General Sir Harold E. Franklyn in "The Army Quarterly" (Great Britain) October 1951.

IN THE early days of warfare an army was often commanded by the reigning monarch who was also, in fact as well as in name, the head of state; thus the problem of co-operation between soldier and statesman did not arise. As parliaments gradually assumed the real power, there was a feeling of suspicion toward all generals by politicians and by the people. The powers given by Cromwell to his major generals heightened this suspicion and dislike. Moreover, the brave but not very intelligent soldier was looked upon with some contempt by statesmen and this feeling was heartily reciprocated. Today, however, it is probably true to say that the successful admiral, general, or air marshal would have been equally successful in almost any career. In consequence, they are able to hold their own intellectually with statesmen, and there is no reason why each should not understand the other's point of view.

The Changing Pattern of War

Prior to 1914, wars were fought almost entirely between rival navies and between rival armies; the civilian populations, except when their countries were invaded, were not intimately involved. With the advent, however, of air attacks on cities, of submarine attacks on shipping, and with the great development of propaganda, warfare became much more a struggle between nations as a whole than merely between their armed forces. Attacks on the enemy's means of livelihood, on his industrial productivity, and on his morale, together with defense against such attacks, have become as important as battles lost or won. The correct assessment of these newer features in relation to the purely military effort makes it more and more necessary for statesmen to control grand strategy.

General MacArthur's testimony before the American Senate made it clear that in his opinion (an opinion, moreover, that he propounded in 1932 and to which he adheres today) the sole responsibility for all main decisions in war rests without doubt on the head of state. He stated that:

> The national strategy of any war, that is, the selection of national objectives and the determination of general means and methods to be applied in attaining them, as well as the broad policies applicable to the prosecution of war, are decisions that must be made by the head of state, acting in conformity with the expressed will of the government. No single department head could or should be responsible for the formulation of such decisions. For example, in every war that the United States has waged, the national objective to be obtained has involved the Army in land attacks against areas held by the enemy. In every instance, missions have been prescribed for the Navy which had in view the assisting and facilitating of the Army effort. Yet, in no case could these missions and objectives have been properly prescribed by the Secretaries of War and Navy acting in unison or by a single super-secretary acting for both. The issues involved are so far-reaching and so vital to the life of the Nation that this phase of co-ordinating Army and Navy effort should not be delegated by the Commander-in-Chief to any subordinate authority. Any such attempt would not constitute delegation, but rather abdication.

There is nothing particularly new in General MacArthur's statement, but it does constitute an up-to-date, clear, and decided appreciation by a distinguished general of a situation which should not, and must not, be open to any doubt.

Influence of Allies

Although the head of each state, guided by his professional advisers, both civil and military, will be responsible for making the principal decisions as far as his own country is concerned, grave difficulties must surely arise when several countries are allied together, as in the case of the North Atlantic Treaty Organization (NATO). These difficulties have be-

come apparent in the conduct of the Korean campaign. As soon as the original plans, for one reason or another, begin to get out of shape, an opportunity is afforded to the small men to declaim their ill-balanced views: this may well affect public opinion and react on the heads of state. Another example was the ill-advised clamor for a "second front" in 1942-43. The ideal would be for one great statesman to be selected for over-all conduct of the war, provided he carried the complete confidence of all the countries concerned. It would, however, be impossible at present to visualize all these countries being prepared to surrender their sovereign rights to even an outstanding man. The necessity of some form of compromise places these countries at a disadvantage as compared with a dictatorship, for instance that of Stalin or Hitler; in the latter case, however, much of the advantage was offset by interference in purely military matters.

It is not the purpose of this article to examine in detail the complicated organization set up by NATO for the higher conduct of a war, but it is indeed difficult to see how anything very useful can emerge from the deliberations of so many and such diverse committees. It is to be hoped, however, that worth-while decisions will be made as a result of periodic meetings between heads of state accompanied, of course, by their official advisers. This, then, will leave the various committees, civil and military, the task of co-ordinating matters only of minor and day-to-day importance. Theoretically, there should not be insuperable difficulty in heads of state agreeing on such directives as the supreme commander needs to be given. In practice, there inevitably will be the problem of bringing several diverse views into line, with the almost certain result that refuge will be taken in compromises: not only do compromises seldom give the best results, but they may prove incapable of being translated into clear-cut orders to the supreme commander. As long as the war is proceeding satisfactorily, the prestige of the supreme commander will remain high and it is likely that he will be given a free hand to carry out his original instructions without change or interference. As soon, however, as affairs cease to prosper, there is a probability that heads of state, impelled by a diversity of conflicting views, will be tempted to issue a mass of undigested instructions. It is then that the lot of a supreme commander, harried from above and worried by military setbacks, will become a most difficult and unhappy one.

Qualities of a Supreme Commander

The qualities needed by a supreme commander are those of character more than of military skill. In fact, he is born for such an appointment rather than trained for it. He must have a marked but not overpowering personality: he must be tactful but firm. He must be essentially a thinker and a planner with sufficient cool judgment to be able to make well-deliberated decisions. The capacity for making instant decision, so essential in a battle fighter, is not necessary. He must be able to express his views convincingly, both orally and on paper; he should be able to listen to argument and take part effectively in debate. He should be adaptable, entirely free of jealousy and beyond ambition. Above all, it is necessary that he should possess the type of leadership which brings forth willing co-operation from subordinates. The greater his prestige as the result of previous military success in war the easier it will be for him to deal with commanders, who often may be difficult, and with statesmen, who may need restraint from interfering in purely military matters. Moreover, a military reputation will result in his being supported by public opinion throughout the allied countries: this may be of the greatest service to him when his campaign is not going well. Even if he has had no previous opportunity of gaining success in

the field, he must know enough of the military art so as to be able to hold his own with his subordinates and to be able to convince his political chiefs. He also must have sufficient knowledge of political affairs and economic values so as to appreciate the points of view and difficulties of statesmen.

Qualities of a Battle Fighter

In order to illustrate the special qualities needed by a supreme commander, it may be useful here to consider those required by the battle fighter. A commander in battle, whether by sea, land, or air, or a combination of these, should have a colorful and perhaps overpowering personality: he must be one of those who invariably impress on first contact. He should have overwhelming self-confidence and have such determination in following his chosen course as to impose his will on his enemy. He must have such a measure of self-control as never to appear agitated or flurried even in disaster. Although by careful planning he may set a battle going on the right lines, he must be ready to make instant decisions to meet inevitable fluctuations and to base those decisions often on obscure information: in fact he needs to be an inspired gambler, who can calculate risks and yet, at times, be ready to act almost on guesswork. The strain imposed by a long campaign, particularly if battles follow each other in rapid succession, is enormous, and only those with abundant physical and mental vitality can hope to endure for long. A leader without a profound knowledge of human nature will fail to inspire his troops at the right moment, and yet he must be prepared to be ruthless when necessary. Prestige is of some importance, but his first success with the troops then under his command will carry more weight with them than any previous reputation, however illustrious. It is essential, of course, that a commander in battle also should be highly trained in his profession.

It will thus be appreciated that the supreme commander and the battle fighter appear to be dissimilar types in many respects, but it is possible that the comparison has been exaggerated. Nevertheless, there is a difference between the two types. In the British Army, and probably in other armies too, there always has been a tendency to divide educated soldiers into two categories, the commander and the staff officer. In actual fact, the majority of good officers is capable of being efficient in both roles, and yet at each extreme are the commanders who would never make staff officers, and the staff officers who are quite unsuited for command.

Supreme Commander *versus* Battle Fighter

It is not to be wondered at that all the great captains have made their reputations chiefly as battle fighters. It is possible that Napoleon, Marlborough, Wellington, or Cromwell might have made supreme commander in the modern sense of the term, but it seems scarcely likely. It is more certain that Nelson, Ney, Stonewall Jackson, Grant, Beatty, and Rommel did not have the temperament or disposition suitable for any appointment remote from battle. On the other hand, it is probably true that Moltke, Weygand, and Dill were, and General Eisenhower certainly is, well equipped for supreme command: of these it is perhaps fair to say that they were primarily staff officers of the highest types. In between these two types come the very select band who, it would appear, might have been equally successful as battle fighters or as supreme commanders. One might suggest for inclusion in such a list the names of Foch; Robert E. Lee, the great Confederate; Jellicoe; and, perhaps, Wavell. Of these, it is doubtful if Foch really had the temperament for a supreme commander: his prestige was great, and this might have carried him through for a while, but he surely would have been intolerant of any interference in times of adversity. It would be interesting, but in-

advisable as yet, to try and classify many other commanders who made their reputations in the last war. Enough examples have, however, been given to show that not many of the great military leaders of the past would have fitted easily into the appointment of supreme commander: the very qualities which made them great captains would have handicapped them in dealing with statesmen. For the future, we must look to a different type to produce supreme commanders, and it would appear that this type will be more a kin to the staff officer than to the battle fighter. The experiment has often been tried, but seldom with success, of appointing a very tactful and diplomatic chief of staff in order to tone down a difficult commander. Such a step may help to avoid some friction, but it will not affect the main issue which is the harmonious personal relations between the head of state and the supreme commander.

So far, only the qualities required of the supreme commander have been considered, but, if there is to be real co-operation, much will depend on the statesman too. The first essential for easing what is bound to be a difficult relationship is that the head of state should be the real leader of his countrymen, not merely by virtue of his office, but by his prestige, personality, and strength of character: he then can speak with confidence to the supreme commander, who will know that the policy of today is most unlikely to be reversed because of a change of public opinion tomorrow. In this respect, we have indeed been fortunate in this country during most of the two world wars. It may well be that if there should be a third world war the head of state will not have the stature of a Lloyd George or a Churchill.

Military Background Important

The head of state should have sufficient knowledge of military matters to be able to appreciate the point of view of supreme commanders, but it is highly undesirable that he should consider himself to be a military expert, for this may lead to interference in technical matters with unfortunate results. It is curious that so many consider themselves qualified to express decided opinions on army matters, whereas in what concerns the navy or the air force they are much more humble. Yet, it is probably true to say that the handling of armies in the field, and in particular their maintenance, is decidedly more complex than similar problems on the sea or in the air. Statesmen must be guided in military matters by their official advisers: there is a natural tendency, when the head of state is convinced that a certain course of action is highly desirable, for him to seek support from other military experts if his project has been condemned by his official advisers. Military experts do not always agree, and it may not be difficult to find backing for an unsound plan from one of them.

Understanding the Difficulties

It is only in comparatively recent years that it has been fully recognized by the services that not only must statesmen have the supreme control in time of war as in time of peace, but that there must be full understanding of each other's difficulties. In the American Civil War, Federal generals were continually fighting for their heads under what they considered to be undue control by President Lincoln. Moreover, at several periods during World War I, Lloyd George was barely on speaking terms with Haig and often at loggerheads with Robertson; and there were many other instances of disharmony.

Between the two world wars, this problem of the relations between the government and the services received considerable study and thought. In consequence, there was almost a complete absence of friction between commanders and statesmen of the allies. On the enemy's side, however, there was perhaps the worst example in history of interference in mili-

tary matters by the head of state. Not only did Hitler interfere in strategy, but even in tactics on more than one occasion: for instance, it is believed that he prevented any serious attack on the Dunkerque bridgehead, and refused to allow any tactical withdrawals from around the Normandy beachhead. In each of these cases, and also in insisting on the counter-offensive in the Ardennes, he may or may not have been right, but control in the actual conduct of a campaign is entirely outside the sphere of a head of state. Today, it is believed that there is a widespread comprehension of the respective spheres of influence of the statesman and the commander and that the necessity of the closest co-operation between the two is fully recognized.

Power of the Supreme Commander

There is, however, one point which so far has not received sufficient consideration, for there seems to be doubt as to the extent to which a supreme commander should be given political power, if at all. The latest views on this subject have been given by General MacArthur. He is reported to have stated that:

> A theater commander, in any campaign, is not merely limited to the handling of his troops, he commands that whole area politically, economically, and militarily. You have got to trust at that stage of the game when politics fail and the military take over; you must trust the military, or otherwise you will have the system that the Soviet once employed of the political commissar, who would run the military as well as the politics of the country.

It is not, of course, a matter of dispute that when civil government in the area of operations is no longer able to function, or where it is not trustworthy, the handling of the civilian population must become a military responsibility. Any such military government must clearly be under the ultimate control of the supreme commander. The question, however, has wider implications than this, although General MacArthur seems to have been postulating a general principle from the particular examples of campaigns in the Far East. A campaign may be taking place in the territory of a friendly power, when normal diplomatic relations probably are still possible: but assuming, to use General MacArthur's phrase, that politics have failed, it still does not seem to be imperative that the military should take over. On many such occasions, there would appear to be the alternative of appointing a civilian of ministerial status who, although working in close co-operation with the supreme commander, would not be under his orders but under the direct control of whoever appointed him. This system was tried successfully on more than one occasion by the British Government during the last war. It is true that in the case of a campaign conducted by allies it might be extremely difficult for them to agree as to which of them should supply the minister. Nevertheless, it surely must be preferable that the larger political questions should be handled by heads of state, assisted by local representatives, rather than that the supreme commander should be given a political staff of sufficient status to be able to advise him on these important issues. It is no more reasonable to expect a supreme commander to be a political expert than it is to expect a statesman to be a military expert.

It is believed that the only political advisers under the actual orders of the supreme commander should be of junior rank, who will be mainly useful in advising him on political procedure. If these advisers are of such a status that their political opinions carry weight, therein may lie a source of friction and of danger.

Subordinate Appointments

It might be appropriate to examine here the principal subordinates who should be appointed to serve under the supreme commander. It must be remembered that a sailor or an airman, and not invariably a soldier, may be given this post: in fact

there has already been one example of a sailor being appointed. General Eisenhower had no commander of land forces during his invasion of Europe, and one wonders, if a sailor had held the command in Europe, whether he would have had a naval commander or not. Theoretically, it would appear logical to have land, sea, and air commanders serving under the supreme commander, no matter to what branch of the service the latter happened to belong. In such case, the supreme commander could delegate control of military operations almost entirely to his subordinates and thus free himself to deal with nonmilitary problems. He then could be selected not so much for his military skill as for his diplomatic ability to deal with heads of state and for his powers of promoting harmonious relations in his command. It is difficult, however, to imagine any commander of distinction being willing to decentralize military control to this extent, and it would seem that inevitably he would lose prestige, not only with his subordinates, but with the statesmen and general public of the allied countries.

NATO Appointments

The number of deputies and other principal military commanders that have already been appointed or planned for NATO appears to be so great as likely to make the machine top heavy. It would almost appear as if the appointments had been made more with a view to placating all countries concerned, rather than with the object of finding the most efficient. It is to be expected that each of these commanders will inevitably surround himself with a staff of a size appropriate to his position. Not only will this make the machine still more cumbersome, but there will be such a drain on officers of all services and ranks as may leave insufficient skilled officers available to win battles. Thus, there may arise the old complaint in a different form that the armed services have too much tail and too few teeth; a more justifiable complaint in this new form than in its old one.

Personal Representatives

Distance may preclude personal contact between the commander and the head of state, and in any case their personalities may not be sufficiently in accord to make such a meeting as useful as it should be. The solution appears to lie in appointing a minister of real wisdom, as the personal representative of the head of state, who will maintain close and continual contact with the supreme commander. This third party must act as an intermediary and he must ensure that the views of both sides may be sympathetically interpreted. Incidentally, this minister can, if thought desirable, deal with all political problems, as suggested earlier; but when the opinions of the head of state and the commander are likely to diverge, or when their personalities are likely to clash, or again if distance prevents their meeting, then the main duty of the minister will be that of mediator. Of course, it is clear that no head of state can allow a supreme commander to broadcast any divergence of views between them. If such should take place, or if friction becomes obvious, there is no option but to recall the commander.

A clash of personalities is more likely to occur when the supreme commander is working directly under one head of state than if he is the servant of several allies. In the latter case, the divergencies of opinion should have been dissipated in conferences between the heads of state and chiefs of staff. Although the resulting directives may be vague and difficult to interpret, there should be no direct conflict of views between an individual commander and an individual statesman. However, when there are only two men concerned, much will depend on whether they can work harmoniously together or not, even if an intermediary has been appointed.

A Haig, a Robertson, or an Allenby could never work happily together with a

Lloyd George. The stolid and the mercurial types of character cannot understand each other and will not blend. A Foch could work with a Clemenceau, but would overwhelm a more average type of statesman. Few statesmen, accustomed as they are to the vivid expression of views in debate or conference, could understand or appreciate a Wavell, who was a man of few words. No commander could expect to work successfully with a Hitler, an unbalanced character, who was certain to become more unbalanced in times of real difficulty.

Harmony Required

Compatability of temperament is so vitally important, between the head of state and the supreme commander, that this consideration should be given priority in the selection of the latter. The battle fighter must be selected for professional reasons only: in fact he will almost select himself, for there are so few, so very few, who are likely to be pre-eminent. On the other hand, there should be a comparatively wide field available for the choice of a supreme commander: heads of state should, therefore, have no great difficulty in finding an individual for the post with whom they are likely to get on easily.

Since Sir William Robertson wrote his book *Soldiers and Statesmen*, there have been marked developments in harmonizing the points of view of each: in fact it is probably true that this excellent book did a great deal to set people thinking along the right lines. There is, however, much to be learned as to the relationship between the heads of several allied states and a supreme commander, particularly when public opinion has been aroused by disaster, when allies are pulling in different directions, and when the supreme commander is obsessed by the difficulties of his campaign.

We have drawn from Western Europe our language, our literature, and our laws—the very roots of our cultural existence. The strengths and weaknesses of European peoples are reflected in the strengths and weaknesses of the American people. Even ways of thinking are based on our common heritage. Although we do not always see eye-to-eye with our friends, the compelling truth is that even if there were few bonds of friendship and no cultural ties, the nations of Western Europe would still be necessary to the survival of the free world.

General J. Lawton Collins

Measured against the mighty odds of Soviet power, the free world has a long way to go in a very short time. Yet our partner nations have taken their stand with us and are hard at work in doing their share. They must and will do more as they grow stronger.

Major General George H. Olmsted

Zonal Defense

A Study of the Modern Operational Defensive

Digested by the MILITARY REVIEW from an article by Bodo Zimmerman (former lieutenant general in the German Army) in "An Cosantoir" (Ireland) January 1952.

TODAY, more than ever before, every operational defensive is shown to be dependent on a zonal defense over a wide area, avoiding all rigidity and the establishment of so-called "main defense lines," with the primary emphasis being placed on speed and elasticity. This means that the Maginot period has passed and that the old Clausewitz doctrine has achieved renewed validity in a new form. Generally, the considerations influencing the employment of a zonal defense are numerical inferiority or the trading of space for time.

Determining Factors

One can see that an operational defensive is only the first link in a chain of various operational actions. Its culminating period, in the event of its successful execution, will always represent a transition to the launching of an offensive. How and where the choice of an operational zone of defense is made depends primarily upon the geographical, climatic, and other conditions within the area. Other determining factors are the suspected operational intention of the enemy, and the comparative strengths of the opposing forces.

Hypothetical Study

The basic theme of the following study is that the strength of the defender is considerably less than that of the enemy, and that he consequently—presumably from the long-term point of view—is compelled to provide for an economical, but nevertheless effective, employment of his forces within his zone of defense. This again leads us to a consideration of how such an area is to be exploited in the most practical manner through the employment of a zonal defense in order to achieve the greatest possible success and to prevent the enemy from overrunning the proposed defense area despite the numerical and material superiority of the enemy.

The basic consideration means that the entire defensive system, and the tactics employed, must aim at slowing down the enemy to an ever greater extent deep within the area, and depriving him, gradually and with ever increasing effect, of the impetus of his offensive thrust in order to bring his attack to a standstill by the employment of strong, mobile, and extremely hard-hitting operational reserves. This may be compared with the effect of an elastic fishing net which, at first, yields to a shock, but then becomes taut and firm as it becomes full. When this firm point is reached, the commander will know where to launch the most effective counterattack against the enemy compressed within a certain area.

The Opposing Forces

So much for general considerations taken from the over-all point of view. To cite particular considerations, let us assume that the defender is initially in possession of forces about one-fourth the size of those of the enemy. In our assumed case, the defense would have only 16 hard-hitting divisions at its disposal (8 of which would be armored divisions), an adequate antitank defense, and a small air force, consisting principally of modern fighters and close-support formations.

The enemy can start with, let us say, about 60 to 64 divisions (20 of which would be armored divisions), and adequate antitank weapons. His air force is three times larger than the defender's, with one-third of the air force consisting of bombers.

This is an apparently overwhelming superiority at first sight!

It can be imagined how carefully the de-

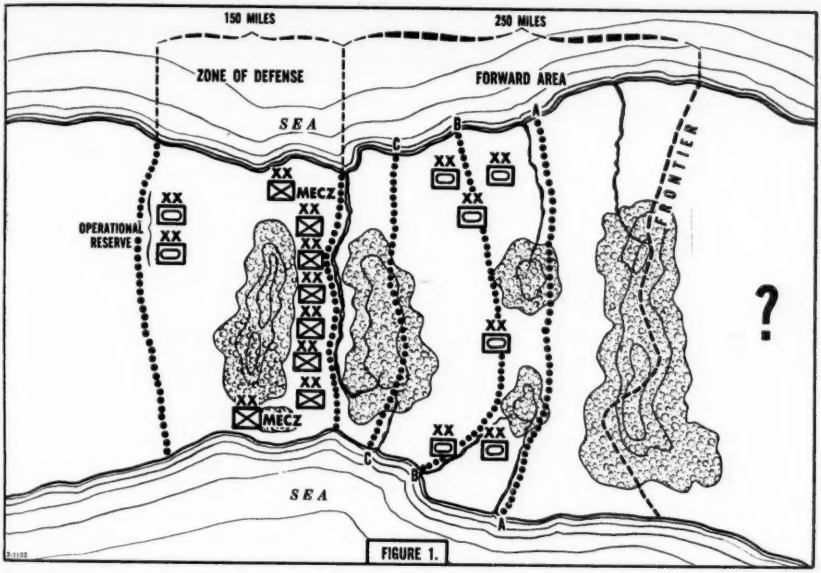


FIGURE 1.

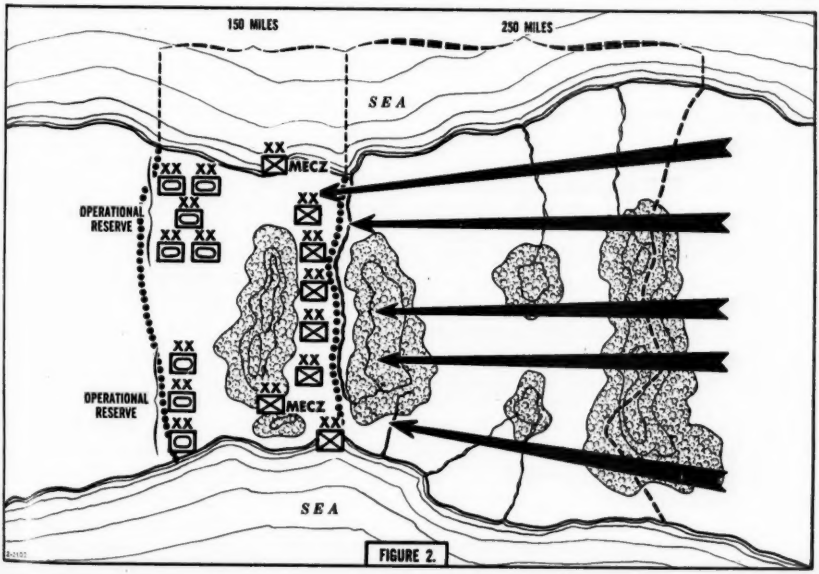


FIGURE 2.

fender must lay his plans in order, first of all, to find the most promising system of elastic defense against this superiority, if the ultimate objective of bringing the enemy to a halt in this defensive system is to be realized in spite of his superiority.

Factors to Consider

The following factors must be weighed:

1. The probable intention of the enemy.

2. His strength (where will his point of main effort be?).

3. How should the defense act in the face of this?

Any consideration of strength, time, and space compels the defense, first of all, to examine the terrain; its ground cover, sectors, river courses, and flank supports. Figure 1 illustrates some of the terrain features which must be taken into consideration in planning for the defense.

It is certain that an attacking enemy will launch his attack with the strongest possible forces and over a wide front, and that fast advance forces will penetrate as deeply as possible in order to keep the overrun area free for the large formations following, particularly the armored and motorized divisions. The advance forces also will be used as a reconnaissance and screening force for the subsequent movements of the large formations. It must be the main objective of the enemy to advance boldly, to maintain communications between the individual assault groups, and, maintaining the cohesion of the front striving to advance, to penetrate, as quickly as possible, deeply into the defensive zone in order to pierce the line and thus occupy the defender's hinterland. In this task, he will have the co-operation of his superior air force. Airborne landings will play an important role in the offensive operation. Moreover, should the enemy have a hard-hitting navy, aircraft carriers, and sufficient sea transport space, the defense also could expect a surprise landing attempt in or behind the deep flank of the probable defensive system.

The commander of the defense forces would have to take all these factors into account in order to arrive at a final decision regarding the type and the system of defense as well as its tactical organization.

The probable point of main effort of the enemy attack will usually be wherever the terrain permits bold movements and the initial deployment of strong armored and motorized forces over a large area (see Figure 2).

The Element of Surprise

A further consideration which the defender must bear in mind is that contiguous peacetime frontiers enable the enemy, by hermetically sealing his frontier after the manner of a well-known example, to cloak effectively his actions and intentions. It is true that his strategic concentration cannot take place completely unobserved, but his initial offensive movements can, nevertheless, contain the element of surprise in the time chosen for their initiation!

This compels the defender to push his most advanced reconnaissance and covering forces, supplied with the most modern radio equipment, forward as close as possible to the enemy frontier, and to use them as highly mobile patrols. Close-combat antitank weapons and mines must be available in large quantities.

This, in turn, requires that the area intended to serve as the theater of the mobile defensive should be determined at the earliest possible time and that this area (see Figure 1) should henceforth be tactically graded in the most effective manner in order to permit the employment of an effective type of elastic defense. This defense becomes increasingly stubborn and unyielding with the passage of time, and is designed to inflict such injury on the enemy, even during his advance, that he will be in a weakened condition when he reaches the zone in which the defender

seeks the real decision. To accomplish this, the defender must organize the area on the immediate front, in depth, from the boundary onward, before this actual main defense zone in which mobile combat will take place, and at the same time avoid the expenditure of the defender's valuable forces sent into action there, for they are intended to play a part in the subsequent struggle for a decision.

Therefore, the total available forces must be carefully examined, with a view to their most suitable employment, and be intelligently engaged. The direction of the fighting in the area on the immediate front should be in the hands of tank commanders of the stature of Patton and Guderian and, from the point of view of finesse and daring, it should be entrusted to men like Rommel. The fundamental guiding idea, however, should always be borne in mind that these forces should inflict the greatest possible damage on the enemy while preserving their own combat efficiency.

Synchronizing the Effort

A well-organized intelligence system always should provide the commander in charge of the fighting in the area on the immediate front with a complete picture of the situation in order to enable him to synchronize and direct the short, rapid offensive thrusts of his individual groups. Such thrusts should be carried out mainly in the evening or in the early morning before the enemy's air superiority has had a chance to make itself felt, and they should be directed primarily against the flanks of the enemy units supporting his advance. High material losses inflicted on the enemy also serve to obstruct his routes of advance. These routes should be blocked or interrupted in the direction of the front by every suitable means. It is the deliberate intention here, *not* to enter into a detailed discussion of any possible aid which might be rendered by the local population during combat in the area of the immediate front by means of prepared or unprepared "illegal" activities of any kind; however, they *can* play a role as has been proved with well-known examples.

Tactical Sector Lines

A division of tactical sector lines (front sectors which serve to clarify the orders issued), made known in good time, and based on timely ground reconnaissance, is an important factor in preserving the tactical cohesion of the mobile front (see Figure 1; the sector lines are indicated by the letters A, B, and C).

The Enemy Main Effort

As Figure 2 shows, the point of main effort of the enemy attack will lie in flat terrain suitable for the operation of strong armored forces. In this respect, the thickly wooded mountain ranges are less favorable, as they confine the motorized formations to the roads and prevent rapid deployment. Here, however, numerous frontal barricades, effectively covered by fire, could serve to hold up the enemy.

The protection of the sea flanks of the defensive system also demands the proper organization of the point of main effort, as indicated in the grouping according to Figure 2. Wherever the enemy main thrust is expected to develop, the defense also must expect an attempted invasion from the sea, since the enemy must penetrate in depth to achieve his objective. The proposed battle stations of the operational reserve make allowance for this. Against the landings of airborne forces on a large scale, which the enemy can undertake at the suitable moment, the order of battle of the main operational reserve in and behind the main defense zone is so chosen that its two divisions can counterattack rapidly and effectively from what is tactically the most favorable direction.

The wings of the main defensive zone are supported, in effect, with their most advanced extremities against a suitable sector in the terrain (in this case a river) without falling into the error of desig-

nating this river as an insuperable obstacle or a "main defensive line."

Rivers are no longer serious obstacles; this was proved by the battle for the Rhine in World War II. With the proper organization of a prepared defense, however, they form a certain obstacle, compelling the enemy to avoid undertaking individual operations in a hasty manner and with forces that are too weak, but cause him rather to concentrate his forces to attempt a more or less prepared crossing. It is, of course, clear that one should not render the enemy any unintentional aid in this operation, but that all means of crossing, such as bridges and ferries, must be destroyed. On the other hand, these means of crossing must be maintained (by means of a well-prepared bridgehead defense) sufficiently long to permit the last of the defense troops in the immediate area of the front to fall back, because these troops will be used to strengthen the operational reserve, which is, in the last analysis, the deciding factor. It can be seen from this how important it is to synchronize such a defense in such a way that everyone knows, at all levels of the command, exactly what is at stake and so that, out of all the individual actions within the framework of the battle, the final objective may emerge with increasing clarity—the struggle for a decision in the main defense zone by the correct employment of the reinforced operational reserve.

Figuratively, the entire defensive system described can be compared with a mainspring which at first yields easily to any pressure, but then offers increasing resistance requiring the application of more and more strength as the pressure increases. The time finally comes when pressure and counterpressure are equal. This—in terms of tactics—is the moment when the mainspring, subjected to the greatest possible pressure, can be made to rebound in a decisive manner by the employment of the operational reserve. Thus, this study can enable us to form a picture of an operational defensive in an extensive defense area. This area should be divided tactically into:

1. The *area in depth on the immediate front* designed to hinder the enemy and wear down his forces.

2. The *rear area* wherein lies the prepared main defense zone (also in depth), within which the struggle for a decision should take place.

Should it be in conformity with the nature of the terrain and road system, and with the commander's estimate of the probable direction of its employment, the operational reserve can be assembled in the rear area of the main defense zone, or even behind it.

The Battle in the Defense Area

It has already been mentioned, as a combat principle, that the enemy must be made to suffer such heavy losses in men, material, and time in the extensive area on the immediate front that when he finally reaches the outer rim of the main defense zone he will encounter a defender who, although still numerically inferior, has, nevertheless, retained his full strength and is further strengthened by the possession of technical resources.

The troops in the area on the immediate front, whose tactics consisted of the rapid execution of powerful offensive thrusts from the most effective direction and related evasive action of a flexible character, must be so guided by the commander that in the last phase of combat in the area on the immediate front, in our assumed case, they may reach prepared bridgeheads capable of holding them (see Figure 1). Through these bridgeheads, they are released into the area of the operational reserve, where they can rapidly recover their vigor and combat efficiency by reinforcement in men and material which are held in readiness for their arrival.

The methodical evasive withdrawals

with repeated short, surprise offensive thrusts benefit by the fixed sector lines (see Figure 1), which must be regarded primarily as "buying-off lines." They are mainly a means used by the commander as a guide to the troops, in conformity with the terrain, in the issuing of orders and the maintenance of mutual contact.

The battle now beginning, around and in the main defense zone, differs tactically from combat in the immediate front area. Although also flexible in character, it is conducted by the defender in a much more persistent and determined manner, and no longer depends on evasive action, but rather on extreme resilience.

It can easily happen in this struggle—as it has in Korea—that, especially in the first stage of the battle, whole combat groups may be pierced, scattered, or enveloped by the still numerically superior enemy. However, the resistance of such enveloped groups in such circumstances is, in itself, of tactical importance to the over-all operation, for every local pinning down of superior enemy forces then represents a gain for the defender.

Main Defense Zone

The main defense zone should be prepared well in advance in order to meet future developments. Bombproof shelters and stores are established at suitable places within the zone to hold reserves and munitions, and solid, individual strong points are established. This system will serve to stiffen the resistance and can bog down the enemy. His losses will increase. This can be the moment when the enemy will resort to an operational landing of airborne troops behind the rear of the battle front in order to force a breakthrough into the hinterland.

The rapid and highly perfected employment of the operational reserve will smash such a landing of airborne units if it is properly detected and energetic counteraction is taken in good time. The operational reserve then should be again concentrated as quickly as possible so that it can be available to the commander as a decisive weapon for employment at the center of the attack. The commander should consider carefully this latter employment; he should not, however, give the decisive forces freedom of movement until he has obtained a clear idea of the development of the battle.

From all that has been said, it will be seen that no generally authentic criterion can be applied in the case of the operational defensive, because circumstances, geographical factors, and other conditions differ within each theater of war.

However, in the light of our hitherto existing and most recent experiences of war, the principle of zonal defense over a wide area described in this article would appear to be correct.

Training and Co-operation Required

All personnel, of course, must be trained in and familiarized with the tactics required of them, by frequent exercises, especially at night.

Co-operation with a small but hard-hitting air force, which, of course, can only be touched on here, plays an important part. The temporary elimination of the enemy air superiority by the brief, well-directed, mass action of the fighter arm at the focal points of the battle, and the infliction of heavy losses on the enemy by short, effective attacks on worth-while final objectives, must be regarded as a fundamental principle.

To summarize briefly:

One should guard against any scheme which might benefit the enemy.

The correct, logical, and skillful application of the system described to the prevailing factors of time, space, and strength—and to the individual character and combat methods of the enemy—is a matter for the commander!

A Neglected Weapon of War

Digested by the MILITARY REVIEW from an article by
Lieutenant J. Coughlan in the "Canadian Army Journal" October 1951.

HAD Hitler dropped fake pound notes instead of high-explosive bombs on Britain in the summer of 1940, he might have had a better chance to found his Empire that was "to last a thousand years."

Practicality of the Scheme

Can anyone doubt that Germany could have made nearly perfect copies of British pound notes? The bane of counterfeiters has always been that in their efforts to avoid the law they must use second-rate printing presses and inferior materials. Yet, despite these handicaps, they often make imitation bank notes capable of deceiving experienced bankers—imitations which differ from the legitimate articles only by such minor details as the watermark or the size of the serial numbers. Why, then, could not Germany, having access to the best Treasury and banking officials, and having complete control of all printing presses in the Nation, make a pound note indistinguishable from the legal issues of the Bank of England?

Analyzing the Potential

The quantity of such pound notes that could have been rained on England is enormous. Let us suppose, for convenience, that a 5-pound note weighs one-tenth of an ounce. Some 400 tons of such notes would represent Bank of England obligations to the extent of 640 million pounds sterling, which amount is slightly more than the total quantity of bank notes in circulation in England at that time. Since the *Luftwaffe* dropped 400 tons of bombs on Coventry in one night, we must conclude that, *overnight, Germany could have doubled the note circulation of Britain.*

Money Supply and Circulation

Note circulation, of course, is only a small part of the total money supply of a modern industrialized nation with advanced banking institutions. Nevertheless, a good part of the counterfeit currency is likely to find its way into bank vaults and there serve as excess reserves until neutralized by government decree. The importance of bank money, in any case, will pale as compared with counterfeit money: if it is possible to double the note circulation in one night's operations, it certainly is possible to double the total money supply over a period of a week or two.

Would it Work?

It may be objected that a nation may be able to stir up such a patriotic fervor among its citizens that the counterfeit notes would not be picked up. Certainly, if such a possibility exists, the England of 1940 was that nation. Yet, there is no evidence that crime and violence decreased in 1940 in England. On the contrary, the confusion of the bombardment increased the opportunities for theft. If a man will stoop to robbing a bombed store when the whole weight of his deed will be borne by one storekeeper, does it seem likely that he will refrain from picking up counterfeit notes when the harm to his nation will be diffused over its entire population? And what of the street sweepers whose daily job would be to sweep up several thousand 5-pound notes which were all identical with the mere 5 pounds a week they earned? The temptations would be insuperable. The type of man who could walk down a street littered with paper money and not pick up any is indeed rare.

Human Nature a Factor

Even if the people had the best intentions, it is to be feared that errors attributable to human nature would be bound to occur. The familiar sight of the cringing clerk cowering before the massive

manager and asking for a slight raise would be a thing of the past; the clerk would go out to the streets and pick up whatever was needed. The pious parson who had long prayed for divine aid in paying off the mortgage on the priory would refuse to believe the war propaganda which said that this "money from heaven" was nothing but the Machiavellian machination of our enemies. If it would be difficult to explain to adults the reasons for not picking up the money which cluttered up their streets, it would be impossible to explain the same matter to a 5-year-old youngster who thinks that Hitler is just somebody his mother frightens him with, and that inflation is just a big word his daddy hasn't got time to explain; it is to be feared that during the first week of the currency war there would be a serious decimation of wholesale and retail inventories of lolly-pops. The administration of justice, too, would be dealt a severe blow: imagine fining a man for picking up "phony" money; the man simply excuses himself from court for a few minutes and returns with enough money to pay the fine and enough extra to "tip" the magistrate for letting him off so easily. If, instead, offenders are incarcerated, then magistrates accomplish the very blow to production the enemy wants.

Repeating History

However, it is not even necessary that anyone need pick up this new money. It is only necessary that some part of the population distrust some other part that is exposed to the temptation. The spectacle of Germany in the early 1920s will be repeated: storekeepers will mark up prices every hour, workers on receiving their pay will race to the nearest store so that they can spend it before prices are marked up again, and, to hire a taxi, men will need more money than the cab will carry.

Effects on Production

What would be the effects of this tremendous and cumulative spiral of prices? Perhaps an administrative decree would keep people at their jobs. But such an administrative decree is far more likely to be effective when people regard Hitler as a mad and malevolent monster than when they think of him as a good-natured practical joker. Surely the effects on production would be even more severe than the disastrous decline of German output in the inflation of 1920-24; whereas the Germans still had to work to obtain money, the English workers would be able to get far more money by staying away from their jobs in order to go around with their wheelbarrows to pick up the pound notes. While most modern nations depart from strict reliance on the price system during war, prices are still the major incentive to production and the main arbiter of distribution. If they lose all significance, how can production and distribution be controlled short of full regimentation of industry?

Influence on Morale

The effects on the morale of the "bombed" people are likewise bad. Their life-savings are wiped out in an instant; there remains little reason to save money as no one knows how much a pound will be worth in the future. People who bought government bonds will feel that they have been robbed and will feel bitter about having fulfilled their patriotic duty when their neighbors had instead bought a new house. Furthermore, the effects of the collapse will not be restricted to those areas within reach of enemy bombers but will spread to wherever English currency is used. Imagine the plight of the pound sterling in international exchange! British securities would stand in dire danger of precipitate depreciation! Further sales of British bonds would be an absurdity! Since the future value of the pound would be so uncertain that investors, being a cautious tribe, would prefer to wait and see, rather than to buy and suffer. With the impossibility of floating securities in the international market, the foreign exchange

value of the pound sterling would promptly sink to zero! However, if Britain could not have obtained goods from foreign countries with the promise of future repayment in pounds sterling, that is, if Britain could not have obtained credit or could not have sold her securities to foreign countries, how else could she have obtained goods from abroad? Few warring states are in the fortunate position of being able to balance their imports by an equal value of exports, and, in any case, the reversion to barter requires an awkward double coincidence of needs: for example, it is unlikely that Britain would want the same value of meat from Argentina as Argentina would want of manufactured articles from Britain. (We ignore the problem of how the "same value" would be determined when pounds had become meaningless.) Perhaps a return to the gold or to a commodity standard could have been arranged as a temporary basis for the floating of international securities; but even such a "stopgap" takes time, and, in modern war, time is the scarcest of all war supplies. Britain, at any rate, hardly could have survived a month-long interruption to her supplies of foreign goods.

Vulnerability

The vulnerability of a nation to this type of war depends on a number of considerations:

1. The extent to which exchange is effected by money rather than by barter.
2. The social conscience of the people.
3. Previous experience with inflation.
4. Other factors (the other factors being much larger than the three preceding items put together).

A Possible Defense

Probably the only defense possible would be the abolishment of bank notes as legal tender and reliance on bank money and on coins to effect exchange. The changes in administrative arrangements, and the loss of convenience involved in changing to a system in which personal checks were used for all but the smallest transactions, would be enormous. Furthermore, the change would have to be accomplished during peace—this would give all citizens a chance to turn in their bank notes in return for checking accounts with the commercial banks. If we were to wait until war and a possible currency "Pearl Harbor," it would be too late, because the danger already would be done—the money supply already could have been trebled before the bank notes were exchanged for bank accounts.

The Major Question

There are a number of reasons why this comparatively simple idea was not thought of before. First, the estrangement of currencies from the gold standard is a matter of current history: if inflation required the bombardment of a nation with gold coins it was likely to prove expensive. However, this is not sufficient explanation. It would have been possible even in gold standard days to flood enemies with counterfeit bank notes requiring the central banks to pay so much gold on demand. Furthermore, many past wars have forced the belligerents to abandon the gold standard, and the monetary system adopted in its stead frequently corresponded very closely with the modern paper standard; here, too, counterfeit bank notes could have been produced with ease. But there is a second and better reason for the late discovery of this weapon. It is of little use for one antagonist to have large stocks of another's currency if it has no way of getting that currency to the enemy. Small amounts could, of course, be entered illegally on the person and in the baggage of secret agents: but small amounts are not enough and this method of entry is not spectacular enough to attract public attention so as to lead to the psychological undermining of confidence in the currency. Coastal smugglers could, perhaps, have

been used to enter somewhat larger amounts. However, a better opportunity was presented in World War I. The "Big Berthas" with which the Germans were shelling Paris could easily have been used to fire currency into the heart of the French Nation. No more spectacular method was possible and the amounts which could have been showered on the French capital were large.

Value of the Bomber

But the advent of the bomber has changed matters. Large amounts of the foreign currency now can be dropped. What is even more important, they can be dropped exactly where they will have the most strategic effect; no part of the enemy nation, no matter how remote from foreign borders, can be perfectly safe from this weapon. Furthermore, the cargo is invulnerable to enemy flak and fighters: if shot down, the currency becomes the possession of some lucky farmer; and it is probably the only nontaxable windfall gain known to modern war! The airplane, we must conclude, has made our weapon eminently practicable.

We don't know what the Soviet imperialists intend to do. But from a military viewpoint, I believe that if we continue to work for collective security arrangements that help our allies to help themselves, we will continue to deter the aggressive designs of the enemy.

I believe that the actions we have taken so far will continue to have the support of the American people. The moves we have made are morally right, politically and economically feasible, and spiritually well-founded.

General of the Army Omar N. Bradley

At the present state of the air defense art, even the most efficient radar-interceptor-antiaircraft system cannot guarantee immunity from determined enemy air attack in force. The only sure defense against air attack is a retaliatory attack that will wipe out the threat at its bases. Hence the counter-air attack becomes the first charge upon our military resources—our first priority task.

General Hoyt S. Vandenberg

Are We Satisfied?

Digested by the MILITARY REVIEW from an article by Admiral Sir Gerald Dickens in "The Navy" (Great Britain) November 1951.

ARE we satisfied with Great Britain's quota to the allied naval forces?

Are we satisfied that our sea power is adequate for the fulfillment of our responsibilities as a great maritime state and center of the Empire?

It looks as though we are satisfied, and I will try to show in this article that such an attitude is questionable—and dangerous.

The trend of thought seems to be that as the United States Navy is so strong (and, as America is so rich, it can easily be made even stronger) it, together with what we and other allied powers can scrape together, is capable of dealing with the attacks which the Soviet Union and her satellites could send against us. I admit that we could wear down Soviet sea power with such forces, but I suggest that this is not good enough. If the sea job were not done quickly and efficiently, the war would be a long one, and that is to be avoided at all costs; because with the destructive weapons available to belligerents today, a long war would be ruinous even to the victor. Our experiences in the last two wars should be a warning.

In the last war, enormous as the British and American Navies were, there were never enough fighting ships, until the end of the war, to meet all the requirements of the various fleets, task forces, and convoy escorts. However, as you may say, we were fighting not only the fleet of Germany but also the fleets of Japan and Italy. That is so, but in a war with the Soviet Union and her satellites, we still would have things to contend with which would call for the maximum sea effort of which the Western powers were capable. For instance, the Soviets would start a war with from 300 to 400 submarines. Germany had about 50 at the beginning of the last war and even with the small proportion of these 50 which she could maintain at sea at any given time she caused us extremely serious losses in shipping. As she added to the number of her submarines, our shipping losses became staggering, and when America came into the war her shipping also suffered heavily. In addition, for a time the combined strength of our two countries was not sufficient to prevent the loss of millions of tons of shipping with its precious cargoes of munitions, raw materials, food, oil, and gasoline, on which every sea, land, and air operation depended. To replace lost tonnage takes time, and even when production in the United States got into its tremendous stride, and merchant ships in great numbers were built, we could not catch up fast enough. All our subsequent large-scale combined operations were delayed and the war lasted at least a year longer than it would have if our navies had been able to give better protection to our sea communications.

In every volume of Winston Churchill's *The Second World War*, we find constant reference to the delay caused to all operations—North Africa, the Near and Far East, Soviet convoys, the Pacific, the Normandy invasion, and the bombing of Germany—by British and American shipping losses and the impossibility of replacing them quickly enough.

Peril From the Air

Submarines, however, are only one of the forms of attack open to the Soviets. In a new war, we might well experience greater air threat to our sea communications than we had to face in the last war, because the Soviet Union would start off infinitely stronger in the air than Germany was. Our means of defending shipping and ports against this form of at-

tack—in which atom bombs might play a big part—must, therefore, be comprehensive and overwhelming. The Royal Air Force must, of course, play a prominent role in this struggle, but even so the task of the navies would tax all their resources. All convoys must have escort ships capable of providing immediate defense. That means carriers in very large numbers as well as many ships mounting heavy anti-aircraft batteries.

The United States is in a favorable position as regards carriers, having 103 of these ships. The whole of the British Empire together, on the other hand, has only 23 (several not completed). Is that a fair proportion? As regards cruisers, the latter has only 32 while America has 73. Is *that* a fair proportion?

Then there is the attack by mines—deadly weapons and difficult to deal with—a form of attack much favored by the Soviets. As you know, mines can be laid by surface craft, submarines, and aircraft. Again, there are the surface attackers which range from battleships to armed merchant vessels. From all of this, we begin to see how large the scale of attack on our sea communications could be.

Now here I must remind you and emphasize very strongly that the defense of sea communications is not merely based on the number of fighting ships and aircraft possessed by the enemy, but on the number of merchant ships to be protected and the extent of the sea communications. There would be thousands of merchant ships at sea every day of the year and our sea communications extend through all the seas of the world.

Smoldering Fires

Now, to return to the need for more cruisers. The offensive power of navies is far greater than it used to be and, of course, it is essential that while many of our operations must be defensive this ability to strike offensive blows must be fully and constantly exploited. Let us see how this can be done. Sea power is the principal factor in making possible amphibious encroachments on the coast of an enemy (whether these are small temporary operations or large-scale invasions) and of subsequently maintaining the military and air invasion forces after they have landed. Now, the Soviet Union's main weakness seems to lie in her satellite countries. Can it be doubted that wherever we obtained a footing in them the result would be a great surge of underground resistance? The smoldering fires, which we know exist, would leap up and roar if the slightest vent could be opened. The Soviet Union knows this well enough and the knowledge that we could stage such operations at widely scattered points would compel her to immobilize vast numbers of troops and aircraft all over her extensive empire. Let us remember the Peninsular War, where a comparatively small British Army with sea power behind it, acting in a disaffected country, played a major part in bringing about the defeat of Napoleon.

For navies to be able to stage even a few operations of this nature, they must have many ships of a suitable type over and above those needed for the defense of sea communications. Carriers and cruisers in large numbers are essential as we see in Korea. Heavy losses in these inshore forces must be anticipated—as experience in the Eastern Mediterranean in the last war showed. Naturally enough, these operations become far more deadly if our strategic air forces are directed to co-operate and throw their full weight into these deadly thrusts at the joints of the enemy's armor.

The foregoing remarks will, I hope, show that the allied navies cannot be too strong and that, alas, Britain is not pulling her fair weight.

Regaining Our Sea Power

Now to attack the problem from another angle which, certainly in the realms of

long-term policy, is even more important. If we are content to rely so much on another power (for example, the United States) to make good our naval deficiencies, we automatically hand over to that power many of our responsibilities in the defense of the other Empire countries. History provides striking examples of the decline and fall of great maritime states because of similar causes. Sea power lost is seldom regained. Our sea power is the main material bond between us and the countries of the Empire, and, if it is weakened too much, is there not a risk of that bond also being weakened?

Pacific Mutual Security Pact

That Great Britain was excluded from the Pacific mutual security pact entered into by Australia, New Zealand, and the United States must have been a matter for chagrin and surprise to many people in this country, and, I suspect, also in Australia and New Zealand. Whether our Government shared these feelings or is not greatly concerned one way or the other one does not know, for it did not take us into its confidence.

I raise this question because our exclusion is obviously due to the low ebb of British sea power. It is evident that, however strong our Navy might be, circumstances at the moment demand that American forces must predominate in the Pacific. That is a very different thing from our playing no part in the immediate defense of our two great sister states and shedding a great family responsibility. Apart, however, from the psychological aspect, there always must be room for our active participation all along the line, in the defense of these and other Commonwealth countries and their sea communications on which, after all, British shipping predominates. Australasia was placed in jeopardy in the last war not only by the weakness of the British Navy, but, also, by the temporary paralysis of the American fleet in the Pacific caused by the Pearl Harbor disaster.

Can we, however, blame Australia and New Zealand for regarding us as of little account in the matter of their defense? They can see that we have learned no lesson from the last war in which such a large proportion of our failures and defeats arose from our initial sea weakness. We are weaker now in sea power than we have ever been. The fleet in commission is so small that officers and men spend most of their service life ashore. That alone shows a serious weakness in our sea power. We are particularly weak in naval aviation, which should be the most important part of our sea armament. The British Navy invented the business of air fighting over the sea, but that lead has been largely lost. Coastal Command, an integral part of the defense of shipping, is denied to it. For years, our policy governing the provision, entry, training, pay, and promotion of naval aviators has been timid, cheeseparing, and vacillating, with the consequence that we are short of the number of officers and men for even our existing small air arm.

No wonder that the United States, whose navy is responsible for all fighting at sea whether on, below, or above the surface, and whose naval air arm has such a much more important standing in their fleet than, as they see it, ours has in our own, want all the chief allied naval commands in their own hands.

Maritime History

There is another reason, and I submit it as a clinching one, why we should figure far more prominently in the naval effort of the Western powers. We have the finest naval human material in the world. Our understanding of sea fighting is, after centuries of experience, deeply implanted in our systems (as is our understanding of sea trading) and is second to *none*. We can build the finest ships, engines, and weapons; we have the scientists, inventors,

and designers; and, above all, we have the spirit of the sea right through our population. Although we can learn much from America (as she can from us), we can never for a moment feel that the efficiency and fighting qualities of our naval officers and men can take a second place to those of any country in the world. That, too, goes for our merchant navy and fisheries—and let it not be forgotten that the last two are a very important part of our sea power.

All this being so, it is both morally and materially our duty to civilization, as well as to ourselves, that we make the fullest use of this great potentiality which arises from the genius of our people, work it up to the highest pitch, and place it in full measure at the disposal of the allied powers.

Sharing the Load

If we act in this spirit, we would not only keep our sea power so vigorous that it need not fear decay, our prestige as high as it should be, and our Empire ties stronger than ever, but we would be taking a fairer share in the combined naval effort and give the United States a more robust support in that direction. If the United States continues as prosperous as she is at present and increased naval expenditures prove too heavy for us, there are many other ways, military and civil, in which she could and would help us.

However, for the moment, we could surely do much more than we are doing if we stopped spending on so many unessentials both in and outside the Navy. The waste of the country's money is not a matter for discussion here, but we can question Admiralty policy which devotes such a large proportion of the Navy Estimates to the civil side of the Navy—an Admiralty with many more officials in it than were deemed necessary when the fleet was far stronger than it is today and an absurd number of shore establishments. First things first. Devote the lion's share of the money to putting more ships in commission and to the provision of the oil they require to keep the sea.

The Government has not yet produced a serious rearmament policy as far as the Navy is concerned. It is half-hearted, dilatory, and grievously disappointing.

We came very close to losing the battle of the Atlantic during World War II, because of a relatively small number of enemy submarines. I say "relatively" small because today the leadership behind the Iron Curtain has at its disposal a submarine force many times larger than the German and Italian underseas strength at the beginning of the Second World War.

With this in mind, we therefore recognize the importance—the urgent need—of developing submarine countermeasures.

Secretary of the Navy Dan A. Kimball

BOOKS OF INTEREST TO THE MILITARY READER

HITLER'S STRATEGY. By F. H. Hinsley. 254 Pages. Cambridge University Press, Cambridge, Mass. $3.75.

By Lt. Col. Michael J. Reichel, *TC*

Many volumes have been written about the operations and strategy of *Der Führer*. Few have as much to offer as this short, factual monograph. *Hitler's Strategy* depends for its existence upon the capture of the complete German naval archives. While other contemporary documents and authorities are freely used and referred to, the naval records dominate the author's treatment of the subject.

The evidence presented leaves little doubt that Hitler made his own decisions and that, had he been more attentive to the suggestions and advice of his experts, the German defeat would not have come as soon as it did.

Throughout the narrative, considerable emphasis is placed on Admiral Raeder's futile pleas for a higher priority in the production of U-boats and Hitler's determination that the Navy and Air Force must suffer until such time as the Army had secured the Continent. Finally, in 1942, when Raeder was able to convince Hitler that the U-boat provided the only way to defeat the allies in the Atlantic, it was too late.

Evidence clearly indicates Hitler's desire to remove England from the conflict, either by making peace or by bringing about her early defeat. This desire exerted a profound influence on his decision for the execution of Operation *Barbarossa* (the attack on Russia). When he finally gave the order to set *Barbarossa* in motion, he was flushed with success and intoxicated by the propaganda which hailed him as the greatest strategic genius of all time. As a result, the timing of the attack was not in accord with his master plan.

Hitler's distrust of Mussolini, his abiding conviction that he could bring Russia to her knees in a matter of months, his fear of bringing the United States into the war, his wavering determination to invade England, and his lack of decision in the Mediterranean are skillfully woven into the fabric of the narrative.

THE NEW MILITARY AND NAVAL DICTIONARY. Edited by Frank Gaynor. 295 Pages. The Philosophical Library, Inc., New York. $6.00.

By Capt. Richard H. Hansen, *Arty*

This new dictionary, prepared with the assistance of representatives of the armed forces, provides a wealth of information relative to terms and slang expressions used by the armed forces—Army, Navy, and Air Force.

The editor has made every effort to ensure as wide a coverage as possible within the range imposed by the defense security authorities, and has included a thorough listing of basic and technical terms used by the three services.

The major value of this dictionary is the fact that it incorporates most of the material found in dictionaries published separately or jointly by the various services into one compact volume.

AMERICAN DEMOCRACY AND MILITARY POWER. By Louis Smith. 361 Pages. University of Chicago Press, Chicago. $5.00.

By COL. GEORGE C. REINHARDT, *CE*

Mr. Smith and Jere Clemens King (*Generals and Politicians*, reviewed in the January 1952 issue of the MILITARY REVIEW) seem to arrive at similar desiderata: able civil government, supported by capable military willing to remain subordinate to the civil authority. The former presents his case in more, and less interesting, words. Unlike King's France, Smith's United States has never approached the specter of the "man on horseback" closer than the abortive Burr conspiracy early in the nineteenth century. *American Democracy and Military Power* is reminiscent of beating a straw man. Strangely enough, neither author suggests a civil administration organized and directed to (1) develop its military establishment in time of peace to support adequately its foreign policies and (2) provide, during war, the clear-cut national directives for industrial, economic, psychological, and political, as well as strategic, guidance essential to efficient action by its armed forces in modern warfare.

RED CHINA'S FIGHTING HORDES. By Lieutenant Colonel Robert H. Rigg. 378 Pages. The Military Service Publishing Co., Harrisburg, Pa. $3.75.

By WOJG ROSS L. SPENCER

An excellent, unbiased handbook about the army we face in Korea today.

Colonel Rigg discusses the organization of the People's Liberation Army, its manpower, make-up, training methods, and tactics, history, and logistics. He provides a thumbnail sketch of its principal general officers, their personal traits, and tactical methods.

The author, a professional soldier, served as assistant military attache in China from 1945 to 1948.

LEGEND INTO HISTORY—The Custer Mystery. By Charles Kuhlman. 250 Pages. The Stackpole Company, Harrisburg, Pa. $5.00.

By LT. COL. IRVING HEYMONT, *Inf*

Legend Into History is a detailed account of the Custer massacre written by a trained historian. Students of the Indian Wars will find Mr. Kuhlman's book of great interest. Using excellent deductive reasoning, the author has reconstructed the events from the most reliable facts known on a carefully blueprinted time and space background.

Despite the superb maps and profuse photographs, the book fails to maintain interest. Mr. Kuhlman's style is heavy, and rather pedantic. His enthusiasm for his subject has carried him to the point of losing the casual reader in a maze of detail.

DOUGLAS MACARTHUR. By Clark Lee and Richard Henschel. 380 Pages. Henry Holt and Company, Inc., New York. $6.00.

By CAPT. JAMES S. EDGAR, *MPC*

In the first section of this book, Clark Lee presents MacArthur's life story, with emphasis on those events of this great soldier's career which shaped his destiny and, indirectly, that of the United States. The author has, through research, discovered and presented many previously unknown facts concerning the heritage of MacArthur. *Douglas MacArthur* is not a study of strategy or military history, but it does throw light on the strategic thinking of MacArthur.

The second section is a pictorial biography as edited and captioned by the coauthor, Richard Henschel. Here again, by researching family records, many previously unpublished photographs are presented.

Douglas MacArthur is excellent reading for anyone attempting to study the controversy surrounding this military genius, and a valuable addition to the libraries of military men.

RUSSIA'S SOVIET ECONOMY. By Harry Schwartz. 529 Pages. Prentice-Hall, Inc., New York. $6.65.

By CAPT. WILLIAM H. BEAUCHAMP, *CE*

If the principal reason the Kremlin has not already unleashed an attack on Western Europe is the fear by the Politburo that the industrial machine of the Soviet Union cannot stand up in the long run against America's great productive capacity, then it behooves us all, military and civilian alike, to gain as objective a knowledge of the Soviet economy as is possible, so as to better understand what may be in store for us. Nowhere can we gain a clearer picture of the economy of that nation than in Mr. Schwartz's latest scholarly effort.

The author opens the volume with three background chapters covering the resources, history, and ideology of the USSR. The resources and historical chapters are well presented for the subjects respond easily to Mr. Schwartz's analytical approach. (Throughout the book, the reader is presented with a prodigious number of footnotes and often has the feeling he is reading an intelligence survey.) His chapter on the ideological background is not strong but the subject is not too important in a study of this type.

With the background sketched in, a survey chapter on "Soviet Economic Development" follows. This is a summary of what is to follow and the author tells here, in chronological order, the economic story of all phases of their economy from 1917 to the present day.

From this point, Mr. Schwartz moves to separate studies of the various aspects of the economy. There are chapters on the national economic plan, industry, agriculture, transportation and communications, mercantile services, the financial system, the forced labor setup, and foreign economic relations. The study is brought together at the end in "Retrospect and Prospect."

Mr. Schwartz feels that any predictions we might make concerning the future development of the Soviet economy should be based on its record to date. He feels that there is some chance the Politburo actually may desire to see true communism eventually put into effect in the Soviet Union once the economy is developed sufficiently, but he certainly is not carried away by this idea. An honest survey of the progress of the economy to date is presented along with an interesting illustration of how Stalin himself has sobered his viewpoint in the postwar period as to how rapidly the Nation can expand its economy.

ESTUDOS DE HISTÓRIA MILITAR SÔBRE A 1a. GRANDE-GUERRA (1914-1918). Volumes I and II. By Brigadier Eduardo Santos. 244 and 308 Pages. Tipografia Minerva, Lisbon, Portugal.

By LT. COL. WLADEMIR F. BOUÇAS
Brazilian Army

Volume I of *Estudos de História Militar sôbre a 1a. Grande-Guerra (1914-1918)* can be compared with the first act of a great drama, in which the author not only presents the strategic position of each of the principal belligerents—France, Germany, Great Britain, and Belgium—but explains clearly their military plans and intentions. One of the outstanding features of this volume is the author's use of documents and personal comments to permit the reader to study and compare the various military events.

In Volume II, the author examines the events on the Western front from the beginning of hostilities until the double strategic failures that followed—Germany's struggle for a quick victory, and France's attempts to contain, dominate, and conquer the enemy.

DANGER SPOT OF EUROPE. By Alan Houghton Brodrick. 189 Pages. The Philosophical Library, New York. $3.75.